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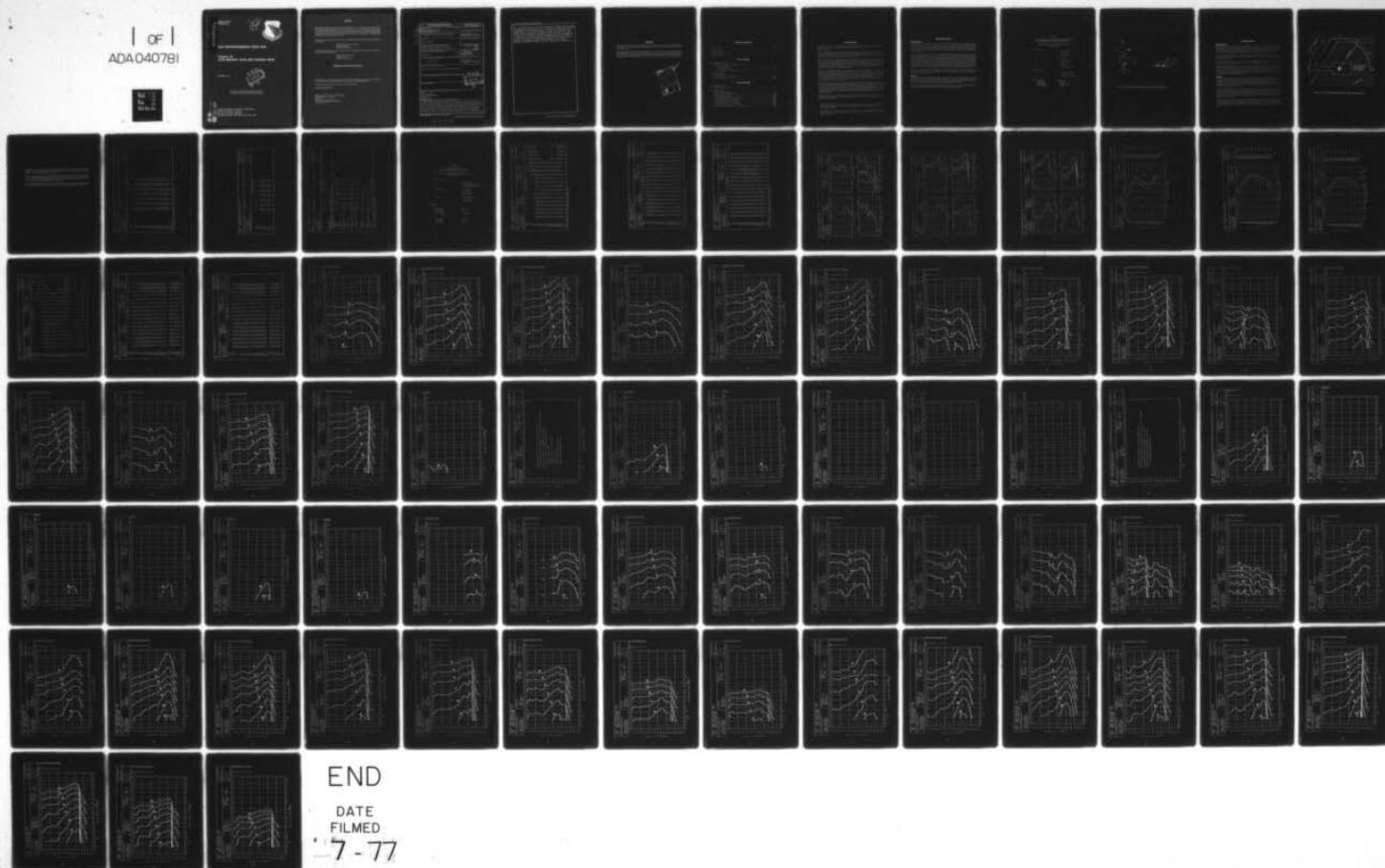
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USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK: VOLUME 70. A-37B AIR--ETC(U)
NOV 75 R G POWELL

UNCLASSIFIED

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AMRL-TR-75-50
Volume 70

12
B.S.



USAF BIOENVIRONMENTAL NOISE DATA

Volume 70 A-37B AIRCRAFT, NEAR AND FAR-FIELD NOISE

NOVEMBER 1975



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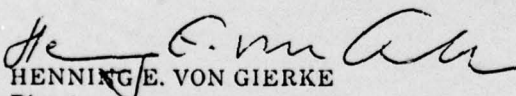
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FOR THE COMMANDER


HENNING E. VON GIERKE
Director
Biodynamics and Bionics Division
Aerospace Medical Research Laboratory

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level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. Refer to Volume 1 of this handbook, "USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application", AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc.

PREFACE

This report was prepared by the Biodynamic Environment Branch, Aerospace Medical Research Laboratory, under Project/Task 723104, Measurement of Noise and Vibration Environments of Air Force Operations.

The author gratefully acknowledges Mr. John Cole for his assistance in preparing this report, Mr. Robert England for his assistance in acquiring the raw data, Mr. Henry Mohlman and Mr. David Eilerman of the University of Dayton for assistance in the mechanics of data processing and Mrs. Norma Peachey and Mr. Mike Patterson for assistance in typing and preparation of the graphics.

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INTRODUCTION

The USAF A-37B is a close air support and attack-type aircraft powered by two J85-GE-17A turbojet engines. The aircraft was manufactured by the Cessna Company and the engines by the General Electric Company.

This volume provides measured and extrapolated data defining bioacoustic environments produced by this aircraft during ground runup operations. Such data are essential to evaluate ear protection requirements, limiting personnel exposure times, voice communication capabilities, and annoyance problems associated with ground runups of the A-37B aircraft.

This volume is one of a series published by the Aerospace Medical Research Laboratory (AMRL) under the same report number (AMRL-TR-75-50) as a multi-volume handbook that quantifies the noise environments produced at flight/ground crew locations and in surrounding communities by operations of Air Force aircraft and aerospace ground equipment. The far-field, community-type noise data in the handbook describe the noise produced during *ground operations* of aircraft, aerospace ground equipment, and other ground-based equipment or facilities.

Volume 1 of this handbook discusses the objectives and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc. Volume 2 provides a method and data for adjusting the handbook's far-field noise data, which are for standard meteorological conditions (15 C temperature, 70% rel humidity, 0.760 meters Hg barometric pressure), to derive comparable data for other meteorological conditions. *Refer to Volumes 1 and 2* (references 1 and 2) for such information because it is not repeated in other handbook volumes.

A cumulative index lists those aerospace systems contained in the handbook, and identifies the specific volumes containing each type of environmental noise data available (i.e., inflight-flight crew and passenger noise, near-field/ground crew noise, far-field/community noise). Volume numbers are assigned sequentially as individual volumes are published. This index is periodically updated as individual volumes are published and is available upon request from AMRL/BBE, Wright-Patterson AFB, OH 45433. Organizations on the distribution list for the handbook will automatically receive a copy of each updated index.

Direct any questions concerning the technical data in this report and other handbook volumes to: AMRL/BBE, Wright-Patterson AFB, OH 45433; AUTOVON 78-53675 or 78-53664; Commercial (513) 255-3675 or (513) 255-3664.

1. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 1: Organization, Content and Application*, AMRL-TR-75-50 (1), Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975
2. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 2: Procedure to Evaluate Effects of Non-standard Meteorological Conditions on Far-Field Noise*, AMRL-TR-75-50 (2), AMRL, WPAFB, OH, 1975

NEAR-FIELD NOISE

MEASUREMENTS

AMRL acquired near-field noise data on the A-37B aircraft during ground runup operations of its turbojet engines. For these tests the aircraft was located on a concrete runup pad at Edwards AFB, CA, with no significant reflecting surfaces in the vicinity except the ground plane. Table 1 gives the surface meteorological conditions and the two engine power conditions. The groundcrew chief selected power conditions and near-field locations generally used during routine maintenance or engine runup for preflight checks.

At each near-field location a test engineer randomly moved a hand held microphone in and around each location, probing all areas where a crew member's head would normally be located. He recorded all of the noise samples on magnetic tape. During analysis of each sample, he determined the root-mean-square sound pressure using a 4- or 8-second integration time to derive a power-averaged level for each location. Figure 1 shows the six near-field locations where ground crew are usually located for maintenance and/or pre-flight checkout operations. Estimates of noise levels at other locations in the near-field are difficult since the noise source is spatially distributed, i.e., not a point source. The noise levels at near-field locations can vary widely depending upon relative distances from each noise source (intake noise, exhaust noise, panel resonances, internal engine noise through the engine wall, etc.).

Table 1 lists the numeric/alphabetic designators used on the data pages in this report to identify the measurement locations and test conditions. For example, the designator 1/A means ground crew location 1 and test condition A.

RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced by the A-37B aircraft at the six ground crew locations. This table includes the overall, 1/3 octave band, and octave band levels. From these data one can calculate the variety of measures given in Table 3, which are widely used to assess the effects of noise on personnel and their performance.

All near-field data are for the meteorological conditions at the time of test but are valid for all typical airbase meteorology because of the short sound propagation distance involved.

TABLE 1
MEASUREMENT LOCATIONS AND TEST CONDITIONS
FOR NEAR-FIELD NOISE MEASUREMENTS

A-37B Aircraft, Ground Runup, Edwards AFB, CA
25 September 1972

Ground Crew Location

1	Engine #1 Start
2	Engine #2 Start
3	Marshall
4	Wheel Chock Pull
5	Flap Check
6	Hydraulic Leak Check

Aircraft Engine Operation

A	Engine #1 Idle Power
B	Both Engines Idle Power

Meteorology

Temperature	10.0 C
Bar Pressure	0.704 M Hg
Rel Humidity	87 %
Wind — Speed	3.1 M/Sec (6 Kt)
— Direction	220 Deg.

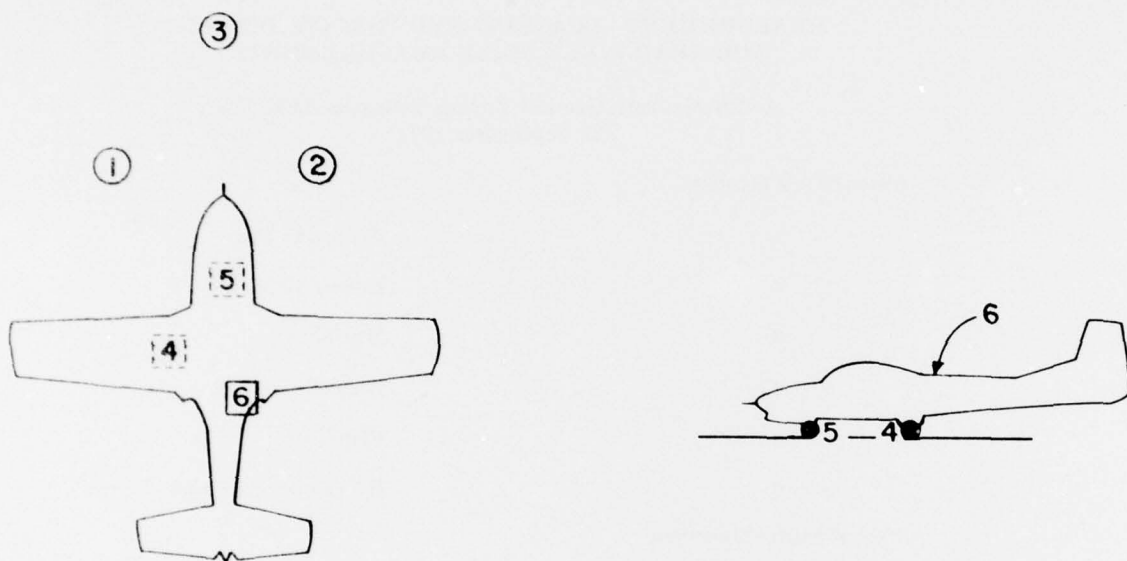


Figure 1. Near-Field Measurement Locations at Pad 17, Edwards AFB, CA

FAR-FIELD NOISE

MEASUREMENTS

AMRL acquired both near and far-field data during a 1- 2-hour test period, thus keeping similar meteorological conditions. Figure 2 shows the ground runup pad, ground cover, aircraft orientation and the 19 microphone measurement sites on a semicircle. The center of the 75 meter radius semicircle used in surveying the J85-GE-17A engines was on the ground directly below the intersection of the aircraft's centerline and the plane passing through both engines exhaust-nozzle exits.

Table 4 provides cockpit readouts of engine characteristics (% RPM, fuel flow, etc.) for each power setting used in the far-field tests. Also listed in this table are the surface meteorological conditions during data acquisition.

All microphone measurement sites are in the acoustic far-field of the source where the sound wavefronts spherically diverge and the noise source may be regarded as a point source.

A portable microphone/tape-recorder system was used to sequentially record the noise at each far-field location. The microphone was attached to a hand held pole, pointed at the source (0° angle of incidence) and vertically scanned from 0.5 to 3 meters for a period of 5-10 seconds during data acquisition at each microphone location. These samples were then time-integrated to derive a root-mean-square sound pressure level. Vertical scanning and time-integrating together reduce anomalies frequently present in data acquired by a fixed height microphone.

RESULTS

Table 5 lists the overall and 1/3 octave band SPL measured at the far-field locations under meteorological conditions at the time of the test. Data in all other figures and tables are based on these levels. These data were normalized to 100 meters distance and standard meteorological conditions (15 C temperature, 70% relative humidity, 0.760 meter Hg barometric pressure) and used to derive the graphic data in Figure 3 which provides a compact summary of the far-field noise characteristics of the A-37B aircraft in a standard format.

Figure 4 and Table 6 present two basic acoustic measures, the acoustic power level and the directivity index, respectively. The acoustic power level describes the power radiated by the source as a function of frequency. The directivity index is a standard acoustical engineering measure that describes the geometric way in which the source radiates this power as a function of both frequency and angle from source. These basic source measures are primarily of interest for acoustical engineers and noise generation/control specialists.

Figures 5 through 11 are sets of equal noise contours describing seven different measures of noise as a function of angle and distance from the source for standard day meteorology. They are respectively, overall sound pressure level, C-weighted sound level, A-weighted sound level, perceived noise level, speech interference level, permissible exposure times for personnel and octave band sound pressure levels.

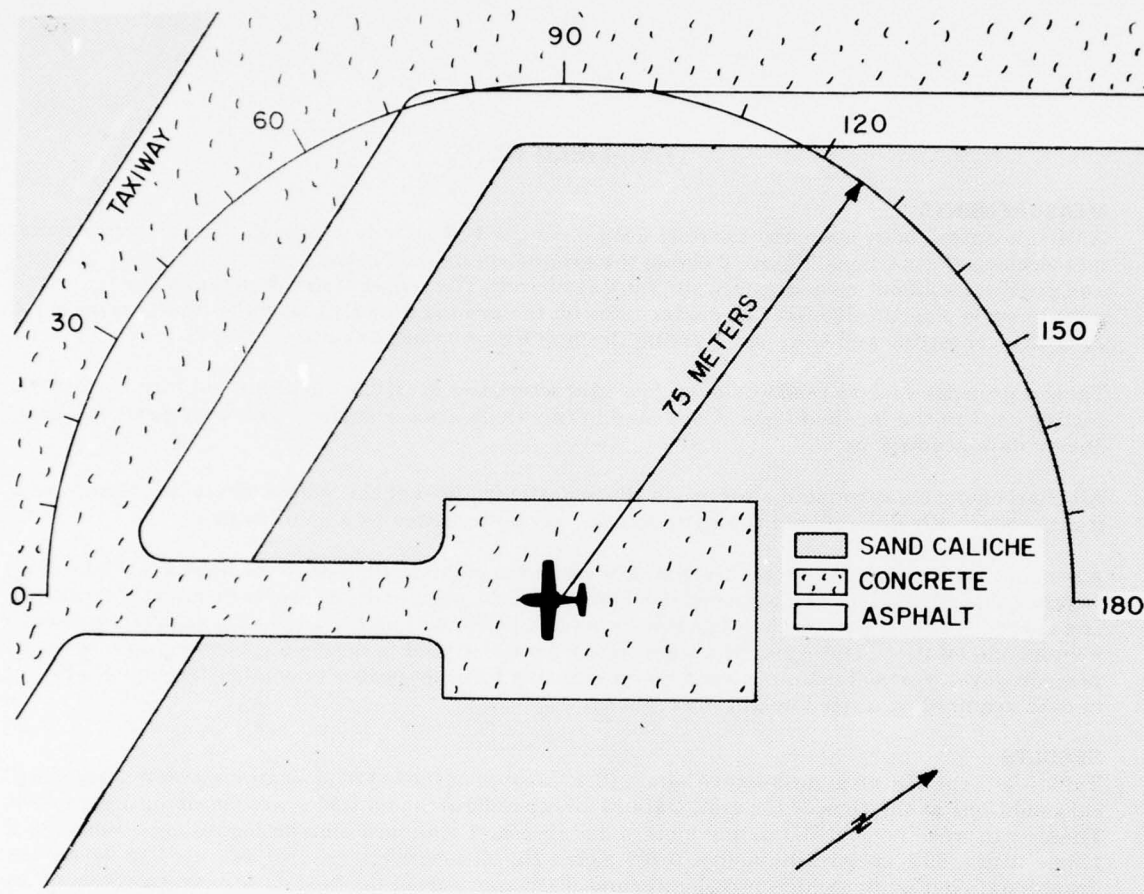


Figure 2. Far-Field Measurement Locations at Pad 17, Edwards AFB, CA

Data excessively influenced by spurious background/electronic noise were eliminated from all figures and tables. No data are presented at the 170 and 180 degree locations for the higher power settings because of turbulent air flow behind the aircraft.

Test personnel performed noise surveys during quiet periods when the background noise was minimal, e.g., early in the morning when no other aircraft or engine test stands were operating. Data eliminated because they were near the background/electronic noise were generally not significant because the levels were so low (e.g., Table 5 and Figure 11 at idle power).

Volume 2 of the handbook describes the influence of meteorology on far-field noise environments, and provides, if required, the factors necessary to adjust the handbook's standard meteorological day data.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)									
2 1/3 OCTAVE BAND									
IDENTIFICATION:									
OMEGA 3.2									
TEST 72-044-002									
RUN 01									
02 DEC 74									
PAGE F1									
NOISE SOURCE/SUBJECT: (OPERATION:)									
A-37B AIRCRAFT									
GROUND CREW									
NEAR FIELD NOISE LEVELS (LOCATION/CONDITION									
FREQ (HZ)									
25 79 82 83 74 87 85 89									
31.5 81 83 82 75 90 88 90									
40 84 87 85 77 95 92 94									
50 90 91 91 81 98 95 96									
63 92 91 92 83 100 99 96									
80 93 90 93 83 101 102 98									
100 91 93 95 82 99 103 99									
125 95 95 97 88 105 105 105									
160 94 96 96 90 106 102 106									
200 92 96 95 87 102 102 102									
250 90 96 95 87 99 100 103									
315 92 95 93 86 99 101 101									
400 92 93 92 87 100 102 104									
500 92 93 92 85 99 99 105									
630 92 94 93 84 99 99 100									
800 94 97 95 85 99 99 101									
1000 97 96 93 86 101 101 101									
1250 98 96 93 87 101 102 102									
1600 103 98 104 94 105 107 101									
2000 103 100 103 94 104 107 101									
2500 101 101 103 94 102 105 101									
3150 104 101 105 95 102 107 102									
4000 113 105 114 106 109 111 103									
5000 107 112 108 98 103 107 102									
6300 111 108 114 101 106 110 103									
8000 122 111 125 111 119 123 104									
10000 113 112 115 102 107 110 101									
OVERALL 124 118 120 113 121 124 116									
< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.									

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)									
2 OCTAVE BAND									
IDENTIFICATION:									
OMEGA 3.2									
TEST 72-044-002									
RUN 01									
02 DEC 74									
PAGE J1									
NOISE SOURCE/SUBJECT: (OPERATION:)									
A-37B AIRCRAFT ()									
GROUND CREW ()									
NEAR FIELD NOISE LEVELS ()									
LOCATION/CONDITION									
FREQ (HZ)	1/A	2/A	2/B	3/B	4/B	5/B	5/B	6/B	
31.5	37	83	87	80	96	94	94	96	
63	96	96	97	87	104	104	104	102	
125	98	100	101	92	103	103	103	109	
250	96	100	99	91	105	105	105	107	
500	97	98	97	90	104	105	105	108	
1000	101	101	103	91	105	105	105	106	
2000	107	104	103	99	108	111	111	106	
4000	114	113	115	107	111	113	113	107	
8000	123	115	126	112	119	123	123	108	
OVERALL	124	118	126	113	121	124	124	116	

TABLE: MEASURES OF HUMAN NOISE EXPOSURE	IDENTIFICATION:
3	OMEGA 3.2
	TEST 72-044-002
	RUN 01
	02 DEC 74
	PAGE 41
NOISE SOURCE/SUBJECT: (OPERATION:)	
A-37B AIRCRAFT ()	
GROUND CREW ()	
NEAR FIELD NOISE LEVELS ()	
	LOCATION/CONDITION
	1/A 2/A 2/B 3/B 4/B 5/B 6/B
HAZARD/PROTECTION	
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DB) AT EAR	
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DB) AT EAR	
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)	
NO PROTECTION	
OASLC	121 116 124 111 113 122 115
OASLA	123 117 125 113 120 123 114
T	P 3.2 P 2.7
MINIMUM QPL EAR MUFFS	
OASLA*	98 92 100 87 95 98 92
T	42 120 30 285 71 42 120
AMERICAN OPTICAL 1700 EAR MUFFS	
OASLA*	95 89 98 84 92 96 87
T	71 240 42 490 120 60 285
V-51R EAR PLUGS	
OASLA*	92 87 95 83 90 93 87
T	120 285 71 571 170 101 285
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS	
OASLA*	82 76 85 71 79 83 74
T	679 960 40+ 960 950 571 960
H-133 GROUND COMMUNICATION UNIT	
OASLA*	92 87 95 82 90 93 86
T	120 285 71 679 170 101 339
COMMUNICATION	
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)	
PSIL	102 101 103 93 106 107 107
ANNOYANCE	
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)	
TONE CORRECTION (C IN DB)	
PNLT	138 132 140 129 136 139 129
C	2 2 2 3 2 2 1

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.
P ADDITIONAL EAR PROTECTION REQUIRED.

TABLE 4
TEST CONDITIONS
FOR FAR-FIELD NOISE MEASUREMENTS

A-37B Aircraft, Ground Runups, Edwards AFB, CA
20 & 25 September 1972

Aircraft Engine Operation

Idle	Both Engines 46% RPM NC (Core Speed) 355 C EGT (Exhaust Gas Temperature) 495 LBS/HR FF (Fuel Flow)
85% Runup	Both Engines 85 % RPM NC 490 C EGT 1250 LBS/HR FF
Military	#2 (Right) Engines 100 % RPM NC 574 C EGT 2250 LBS/HR FF

Meteorology
(85% & Mil)

Temperature	10.0 C
Bar Pressure	0.704 M Hg
Rel Humidity	87 %
Wind — Speed	3.1 M/Sec (6 Kt)
— Direction	220 Deg

(Idle)

Temperature	15.0 C
Bar Pressure	0.705 M Hg
Rel Humidity	59 %
Wind — Speed	Calm

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																
1/3 OCTAVE BAND																
DISTANCE = 75 METERS																
NOISE SOURCE/SUBJECT:																
OPERATION:																
A-37B AIRCRAFT																
J85-G2-17A ENGINE																
FAR FIELD NOISE																
FREQ (HZ)																
ANGLE (DEGREES)																
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180																
25	64<	63<	67<	67<	68<	71<	66<	67<	67<	68<	67<	67<	67<	67<	67<	67<
31.5	66<	67<	68<	68<	68<	70<	72<	73<	74<	74<	74<	74<	74<	74<	74<	74<
40	73<	74<	74<	77<	77<	77<	80	80	80	81	83	83	84	82	80	70<
50	72<	74<	75<	74<	73<	77	80	81	80	81	83	83	84	82	80	70<
63	69<	72<	73	71<	72<	72<	72<	73	73	73	74	77	77	75	71<	62<
80	70<	71<	74	74	74	71<	71<	71<	72<	74	76	73<	75	73<	68<	
100	69<	72	71	72	71	72	71	68<	70	73	71	75	73	71	63<	
125	69<	70	69	71	72	72	67<	68<	70	73	75	75	77	71	63<	
160	68	70	68	68	69	68	67	67	70	70	71	72	73	71	70	60<
200	66	68	68	66	66	66	66	63	64	68	69	69	70	68	66	60<
250	70	70	70	68	68	68	68	65	65	64	65	66	69	71	66	60<
315	72	71	70	69	68	68	68	68	68	68	68	68	68	68	68	60<
400	76	75	75	74	73	73	73	73	68	67	65	66	71	71	67	65
500	74	70	71	70	69	70	66	67	64	63	64	65	65	62	51<	46<
630	72	70	71	70	69	70	66	67	64	63	64	65	65	62	51<	
800	74	71	71	71	70	72	71	67	60	61	64	66	64	61	47<	
1000	86	86	80	83	83	87	88	87	88	87	88	88	88	86	84	79
1250	74	73	74	73	73	74	73	74	73	74	73	70	65	62	59	58
1600	73	73	73	73	72	72	72	70	67	65	66	71	65	61	58	57
2000	81	82	80	84	78	81	79	80	70	67	67	71	67	65	65	55
3150	67	67	67	67	67	65	64	64	59	58	58	58	57	55	53	51
4000	89	89	87	88	87	89	90	87	86	86	86	87	89	88	86	84
5000	89	89	87	88	87	89	90	87	86	86	86	87	89	88	86	84
6300	89	89	87	88	87	89	90	87	86	86	86	87	89	88	86	84
8000	89	89	87	88	87	89	90	87	86	86	86	87	89	88	86	84
10000	89	89	87	88	87	89	90	87	86	86	86	87	89	88	86	84
OVERALL	89	89	87	88	87	89	90	87	86	86	86	87	89	88	86	84

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																			
1/3 OCTAVE BAND																			
DISTANCE = 75 METERS																			
NOISE SOURCE/SUBJECT: (OPERATION:)																			
(A-37B AIRCRAFT (85% RPM)																			
(J85-GE-17A ENGINE (BOTH ENGINES)																			
(FAR FIELD NOISE (FREE FLOW)																			
METEOROLOGY:)																			
TEMP = 10 C																			
BAR PRESS = 704 M HG																			
REL HUMID = 87 %																			
IDENTIFICATION:)																			
OMEGA 1.4																			
TEST 75-002-053																			
PUN 01																			
13 MAY 75																			
PAGE 2																			
ANGLE (DEGREES)																			
FREQ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
(HZ)																			
25	65<	65<	66<	68<	65<	68<	70<	69<	69<	74	72	74	78	79	81	78			
31.5	69<	67<	66<	67<	69<	70<	70<	71	71	72	73	75	78	80	81	81	81		
40	69<	70<	70<	70<	71<	72<	73	74	75	76	77	79	82	84	85	83	83		
50	70<	70<	71<	72<	73	74	74	75	76	79	80	83	85	85	86	84	82		
63	72<	72<	70<	73<	75<	75	77	77	77	80	84	86	88	90	90	87	82		
80	73<	73<	74<	75<	77	77	79	80	80	82	85	89	92	93	92	87	80		
100	74<	75<	76<	77<	78<	78<	80<	81<	82<	83<	86	89	94	95	93	85	76<		
125	76	77	79	79	81	82	83	83	86	86	89	92	95	98	94	85	78		
160	77	78	79	80	83	84	85	86	86	86	90	94	98	100	94	83	76		
200	78	79	81	84	83	84	84	84	86	87	90	95	101	101	93	79	76		
250	82	81	84	85	87	87	86	87	88	90	92	96	101	101	91	81	81		
315	82	82	84	86	87	84	85	88	89	91	94	96	100	101	90	79	79		
400	82	83	84	85	84	84	86	88	90	92	93	95	100	99	88	73	75		
500	83	84	83	84	85	84	85	86	87	88	91	92	95	96	85	71	69		
630	83	82	82	83	83	83	84	84	86	85	88	90	91	93	81	66	65		
800	80	82	83	83	83	83	84	84	85	85	88	91	90	93	80	63	62		
1000	79	82	82	82	82	82	82	83	84	85	89	91	89	93	79	64	61		
1250	77	80	81	81	81	81	80	81	84	87	88	92	88	92	79	64	62		
1600	77	80	79	80	80	80	79	80	81	84	87	88	91	87	88	78	62	61	
2000	77	80	79	80	79	78	78	81	84	85	88	89	85	85	75	63	60		
2500	77	81	78	80	79	79	79	81	83	85	87	87	84	84	74	64	59		
3150	75	78	78	77	78	78	79	80	82	85	85	85	82	82	73	59	57		
4000	73	77	76	77	77	77	77	77	79	81	83	85	82	82	71	58	54		
5000	72	76	75	75	76	76	76	77	80	81	84	84	81	80	70	55	53		
6300	70	75	74	74	74	74	75	75	76	78	79	80	76	76	67	52	49		
8000	71	77	75	75	75	75	75	75	76	76	76	77	72	72	66	48	46		
10000	61	66	65	65	66	65	65	68	69	71	72	72	68	67	58	45	44		
OVERALL	92	93	94	95	95	95	95	97	98	100	102	105	108	109	102	94	91		
< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE																			

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																					IDENTIFICATION:																				
1/3 OCTAVE BAND																																									
DISTANCE = 75 METERS																																									
NOISE SOURCE/SUBJECT:																					METEOROLOGY:																				
(OPERATION:																																									
(MILITARY POWER																																									
(100% RPM																																									
(SINGLE ENGINE																																									
(FREE FLOW																																									
FREQ																					ANGLE (DEGREES)																				
(HZ)																																									
(0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180)																																									
(25 68 70 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240 1241 1242 1243 1244 1245 1246 1247 1248 1249 1250 1251 1252 1253 1254 1255 1256 1257 1258 1259 1260 1261 1262 1263 1264 1265 1266 1267 1268 1269 1270 1271 1272 1273 1274 1275 1276 1277 1278 1279 1280 1281 1282 1283 1284 1285 1286 1287 1288 1289 1290 1291 1292 1293 1294 1295 1296 1297 1298 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309 1310 1311 1312 1313 1314 1315 1316 1317 1318 1319 1320 1321 1322 1323 1324 1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352 1353 1354 1355 1356 1357 1358 1359 1360 1361 1362 1363 1364 1365 1366 1367 1368 1369 1370 1371 1372 1373 1374 1375 1376 1377 1378 1379 1380 1381 1382 1383 1384 1385 1386 1387 1388 1389 1390 1391 1392 1393 1394 1395 1396 1397 1398 1399 1400 1401 1402 1403 1404 1405 1406 1407 1408 1409 1410 1411 1412 1413 1414 1415 1416 1417 1418 1419 1420 1421 1422 1423 1424 1425 1426 1427 1428 1429 1430 1431 1432 1433 1434 1435 1436 1437 1438 1439 1440 1441 1442 1443 1444 1445 1446 1447 1448 1449 1450 1451 1452 1453 1454 1455 1456 1457 1458 1459 1460 1461 1462 1463 1464 1465 1466 1467 1468 1469 1470 1471 1472 1473 1474 1475 1476 1477 1478 1479 1480 1481 1482 1483 1484 1485 1486 1487 1488 1489 1490 1491 1492 1493 1494 1495 1496 1497 1498 1499 1500 1501 1502 1503 1504 1505 1506 1507 1508 1509 1510 1511 1512 1513 1514 1515 1516 1517 1518 1519 1520 1521 1522 1523 1524 1525 1526 1527 1528 1529 1530 1531 1532 1533 1534 1535 1536 1537 1538 1539 1540 1541 1542 1543 1544 1545 1546 1547 1548 1549 1550 1551 1552 1553 1554 1555 1556 1557 1558 1559 1560 1561 1562 1563 1564 1565 1566 1567 1568 1569 1570 1571 1572 1573 1574 1575 1576 1577 1578 1579 1580 1581 1582 1583 1584 1585 1586 1587 1588 1589 1590 1591 1592 1593 1594 1595 1596 1597 1598 1599 1600 1601 1602 1603 1604 1605 1606 1607 1608 1609 1610 1611 1612 1613 1614 1615 1616 1617 1618 1619 1620 1621 1622 1623 1624 1625 1626 1627 1628 1629 1630 1631 1632 1633 1634 1635 1636 1637 1638 1639 1640 1641 1642 1643 1644 1645 1646 1647 1648 1649 1650 1651 1652 1653 1654 1655 1656 1657 1658 1659 1660 1661 1662 1663 1664 1665 1666 1667 1668 1669 1670 1671 1672 1673 1674 1675 1676 1677 1678 1679 1680 1681 1682 1683 1684 1685 1686 1687 1688 1689 1690 1691 1692 1693 1694 1695 1696 1697 1698 1699 1700 1701 1702 1703 1704 1705 1706 1707 1708 1709 1710 1711 1712 1713 1714 1715 1716 1717 1718 1719 1720 1721 1722 1723 1724 1725 1726 1727 1728 1729 1730 1731 1732 1733 1734 1735 1736 1737 1738 1739 1740 1741 1742 1743 1744 1745 1746 1747 1748 1749 1750 1751 1752 1753 1754 1755 1756 1757 1758 1759 1760 1761 1762 1763 1764 1765 1766 1767 1768 1769 1770 1771 1772 1773 1774 1775 1776 1777 1778 1779 1780 1781 1782 1783 1784 1785 1786 1787 1788 1789 1790 1791 1792 1793 1794 1795 1796 1797 1798 1799 1800 1801 1802 1803 1804 1805 1806 1807 1808 1809 1810 1811 1812 1813 1814 1815 1816 1817 1818 1819 1820 1821 1822 1823 1824 1825 1826 1827 1828 1829 1830 1831 1832 1833 1834 1835 1836 1837 1838 1839 1840 1841 1842 1843 1844 1845 1846 1847 1848 1849 1850 1851 1852 1853 1854 1855 1856 1857 1858 1859 1860 1861 1862 1863 1864 1865 1866 1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 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2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 265																																									

) IDENTIFICATION:
) OMEGA 1.4
) TEST 75-002-008
) RUN 01
) METEOROLOGY:
) TEMP = 15 C
) BAR PRESS = 760 MM HG
) REL HUMID = 70 %
) PAGE 6

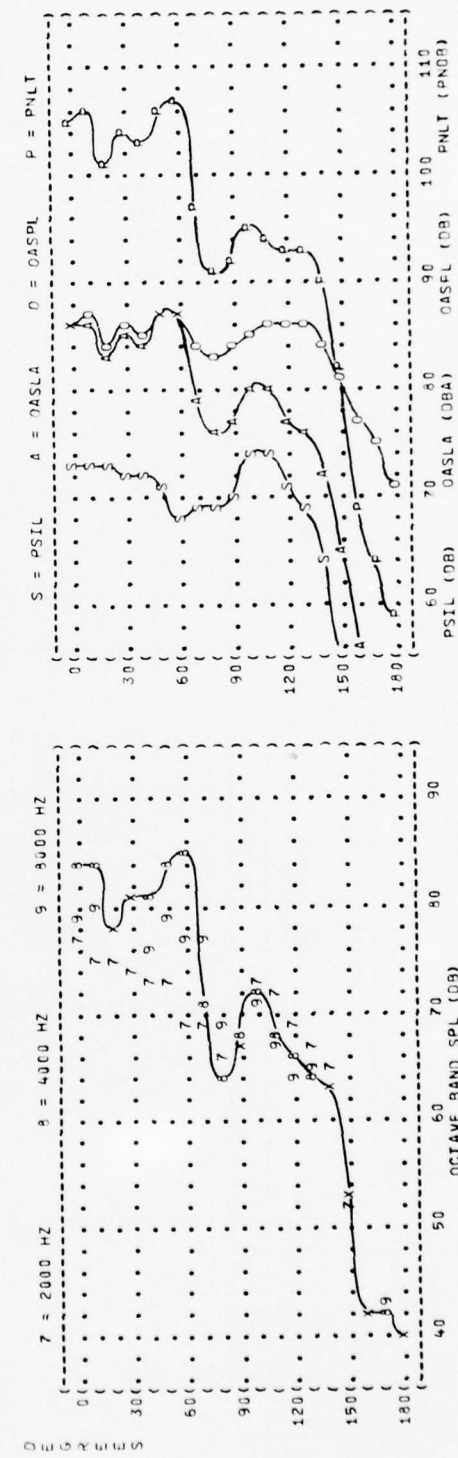
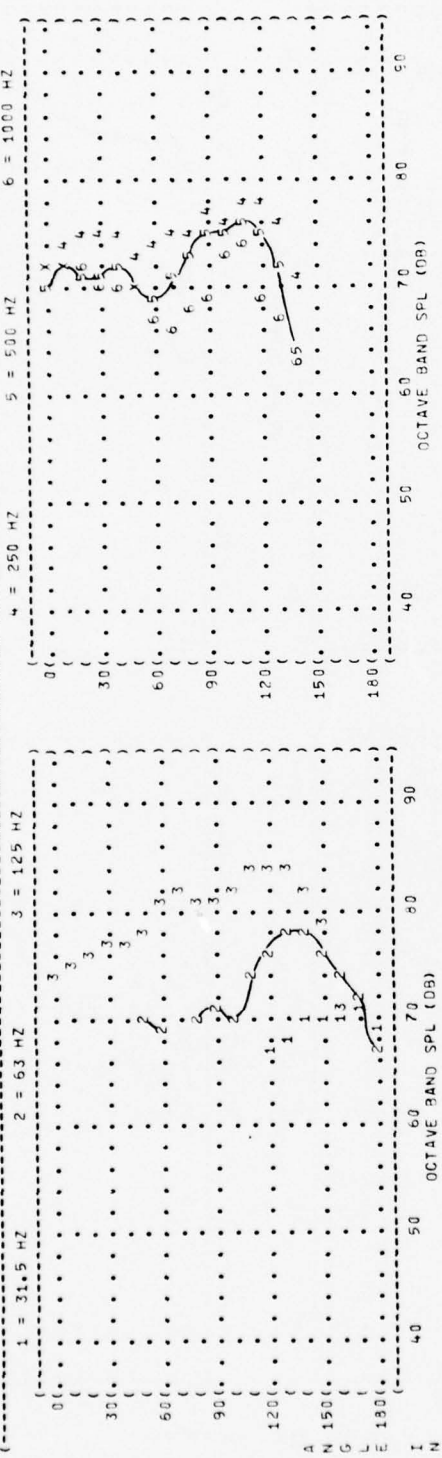


FIGURE: NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT:
 A-773 AIRCRAFT
 J85-GE-17A ENGINE
 FAR FIELD NOISE

OPERATION:
 85% RPM
 BOTH ENGINES
 FREE FLOW

METEOROLOGY:
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %

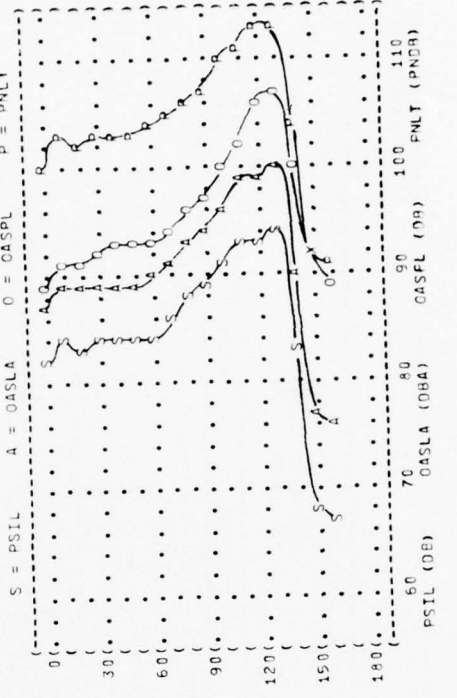
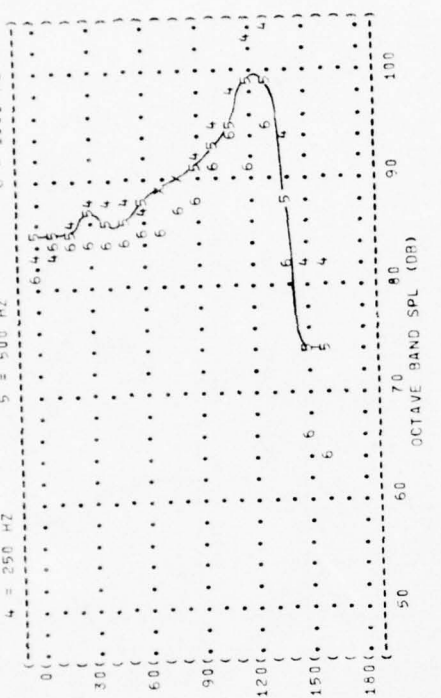
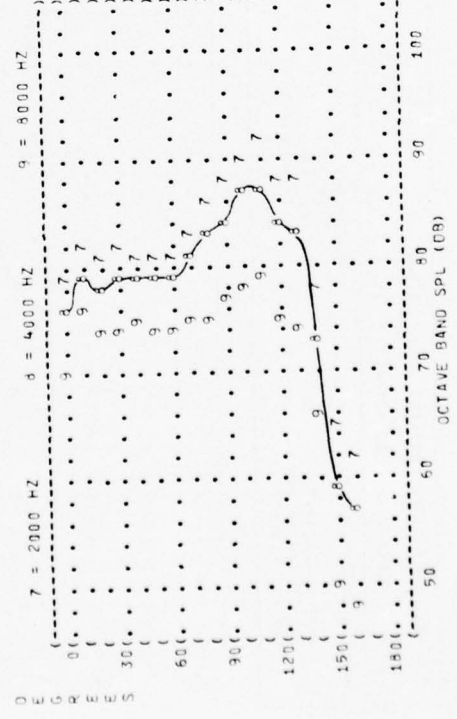
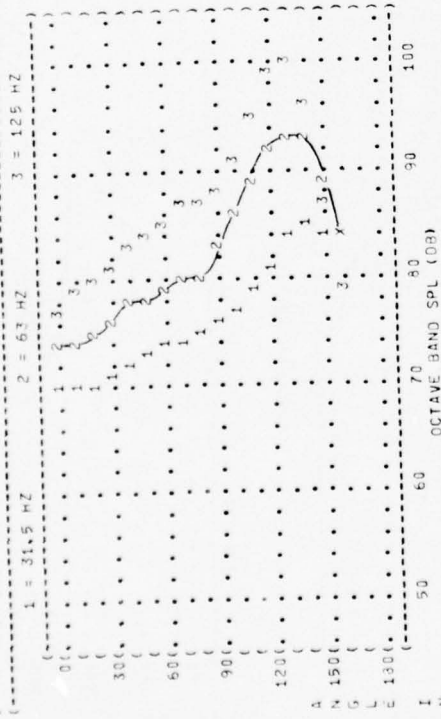
13 MAY 75

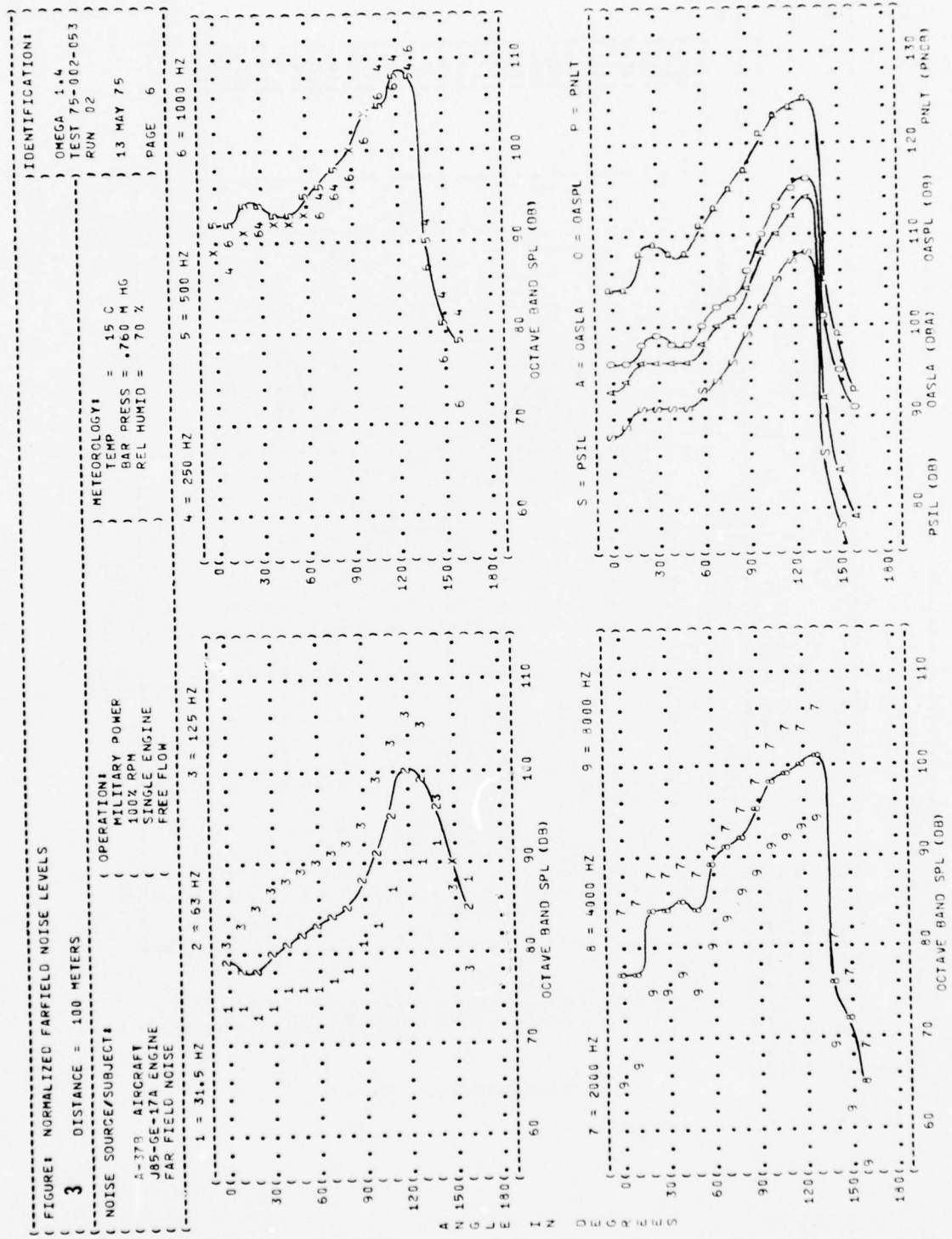
PAGE 6

TEST 75-002-053

OMEGA 1.4

RUN 01





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FIGURE: ACOUSTIC POWER LEVEL (PWL)

4

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-053

RUN 01

13 MAY 75

PAGE 3

NOISE SOURCE/SUBJECT:

OPERATION:

85% RPM

BOTH ENGINES

FREE FLOW

METEOROLOGY:

TEMP = 10 C

BAR PRESS = 704 M HG

REL HUMID = 87 %

A-178 AIRCRAFT

J85-GE-17A ENGINE

FAR FIELD NOISE

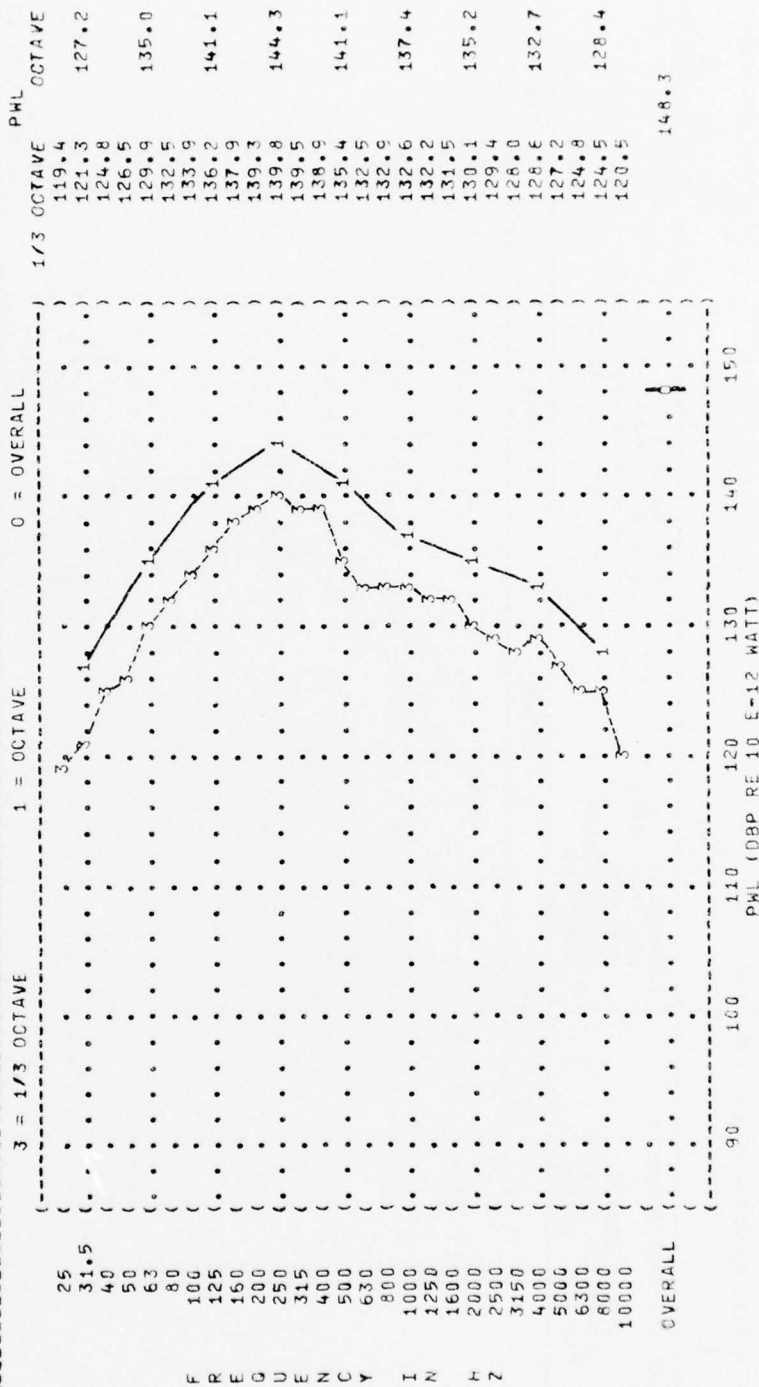


FIGURE: ACOUSTIC POWER LEVEL (PWL)

4

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-053

PUN 02

13 MAY 75

PAGE 3

NOISE SOURCE/SUBJECT:

OPERATION:

MILITARY POWER

100% RPM

SINGLE ENGINE

FREE FLOW

A-37B AIRCRAFT

J85-GE-17A ENGINE

FAR FIELD NOISE

METEOROLOGY:

TEMP = 10 C

BAR PRESS = .704 M HG

REL HUMID = 87 %

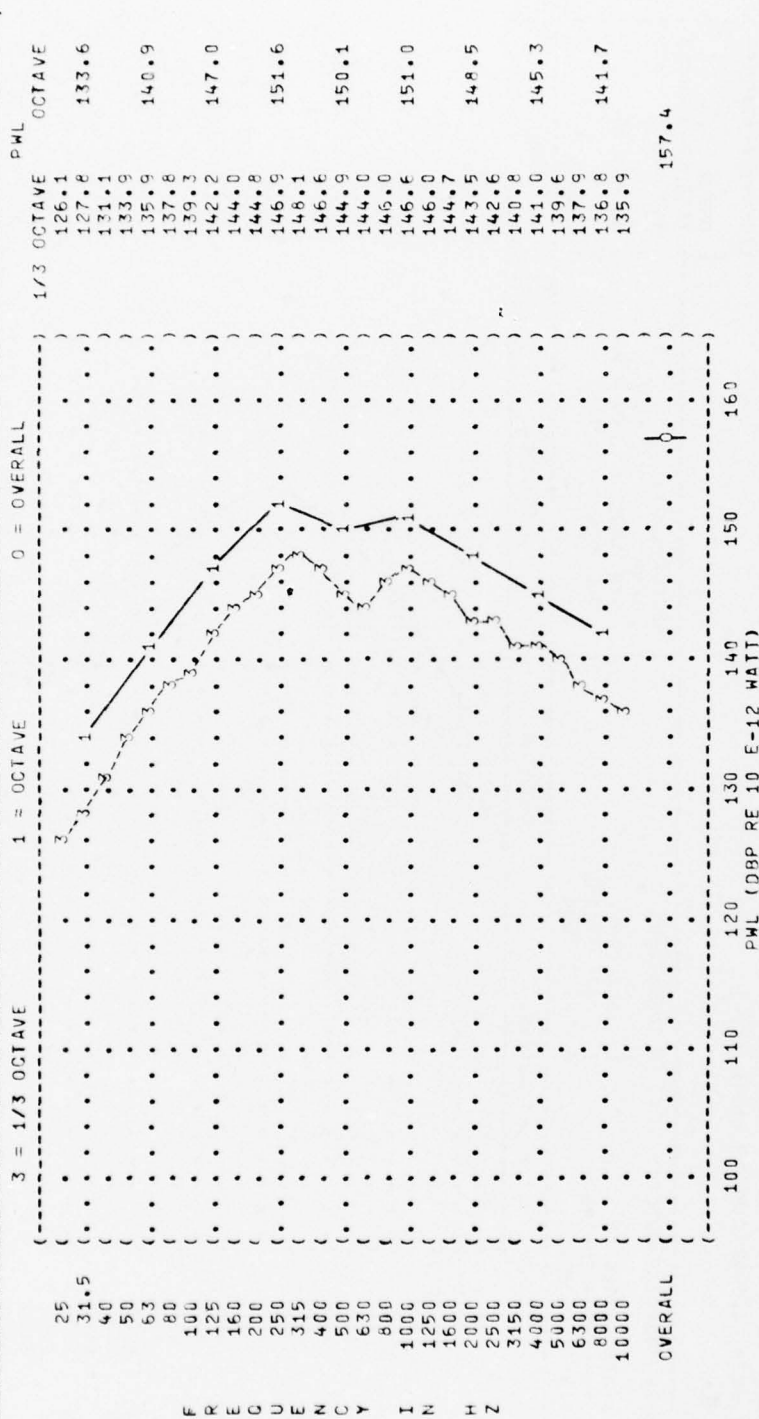


TABLE: DIRECTIVITY INDEX (DB)																
IDENTIFICATION:																
6																
NOISE SOURCE/SUBJECT:																
OPERATION:																
A-37B AIRCRAFT																
J85-GE-17A ENGINE																
FAR FIELD NOISE																
METEOROLOGY:																
TEMP = 15 C																
BAR PRESS = .705 M HG																
REL HUMID = 59 %																
PAGE 4																
FREQ (HZ)																
ANGLE (DEGREES)																
1/3 OCTAVE																
31.5																
40																
50																
63																
80																
100																
125																
150																
200																
250																
315																
400																
500																
630																
800																
1000																
1250																
1600																
2000																
2500																
3150																
4000																
5000																
6300																
8000																
10000																
OCTAVE																
31.5																
63																
125																
250																
500																
1000																
2000																
4000																
8000																
OVERALL																

TABLE: DIRECTIVITY INDEX (DB)																	
6																	
NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY: = 10 C) OMEGA 1.4																	
A-37B AIRCRAFT (85% RPM) BAR PRESS = .704 M HG) TEST 75-002-053																	
J85-GE-17A ENGINE (BOTH ENGINES) REL HUMID = 87 %) RUN 01																	
FAR FIELD NOISE (FREE FLOW)) 13 MAY 75																	
FREQ (HZ) 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180																	
1/3 OCTAVE																	
25	-9	-9	-7	-6	-9	-6	-4	-5	-5	-5	-0	-2	-0	4	5	7	4
31.5	-8	-9	-10	-9	-7	-5	-6	-5	-5	-4	-3	-1	2	4	5	5	5
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50	-11	-11	-10	-9	-8	-7	-7	-6	-5	-2	-1	2	4	4	5	3	1
63	-13	-13	-14	-12	-9	-8	-7	-7	-7	-4	-1	1	4	6	6	2	-2
80	-14	-14	-13	-12	-10	-10	-8	-7	-7	-5	-2	2	5	6	5	0	-7
100	-15	-14	-12	-11	-11	-11	-8	-7	-6	-5	-2	1	6	7	5	-3	-12
125	-15	-14	-12	-12	-10	-8	-8	-8	-5	-5	-1	1	5	7	4	-5	-13
160	-16	-14	-13	-13	-10	-9	-8	-6	-6	-6	-2	2	6	7	2	-10	-16
200	-16	-14	-13	-10	-11	-10	-10	-9	-8	-6	-4	1	7	8	1	-15	-18
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315	-12	-12	-10	-8	-7	-10	-9	-6	-5	-5	-3	0	6	7	7	-4	-15
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500	-7	-6	-6	-6	-5	-5	-5	-4	-2	-2	1	2	5	7	4	-5	-20
630	-4	-5	-5	-4	-4	-4	-3	-3	-3	-2	1	3	4	6	6	-6	-21
800	-7	-5	-5	-5	-5	-5	-5	-4	-2	-2	1	4	3	6	6	-7	-24
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1250	-9	-6	-6	-5	-5	-5	-6	-5	-5	-3	0	2	5	2	5	-7	-22
1600	-9	-6	-6	-5	-6	-6	-6	-4	-4	-3	0	2	3	3	3	-8	-24
2000	-7	-4	-5	-4	-5	-6	-6	-3	-3	-0	1	4	5	1	1	-9	-21
2500	-6	-2	-5	-3	-4	-4	-4	-2	0	0	2	4	4	1	1	-9	-24
3150	-6	-3	-3	-4	-3	-3	-2	-1	0	0	4	4	4	1	1	-9	-22
4000	-8	-4	-5	-4	-4	-4	-4	-2	0	0	2	4	5	1	1	-10	-24
5000	-8	-4	-4	-4	-4	-4	-4	-2	0	0	1	4	4	1	1	-10	-24
6300	-6	-1	-2	-2	-2	-2	-2	-1	0	0	3	4	4	1	1	-9	-24
8000	-4	3	0	1	1	0	1	0	0	1	2	2	2	-2	-2	-26	-28
10000	-7	-2	-3	-3	-2	-3	-3	-1	0	1	3	4	4	-0	-1	-10	-24
OCTAVE																	
31.5	-9	-9	-8	-8	-8	-7	-6	-5	-5	-4	-2	-0	2	5	6	5	4
63	-13	-13	-11	-11	-9	-9	-8	-7	-7	-6	-4	-2	4	6	5	1	-3
125	-16	-14	-12	-12	-10	-9	-8	-7	-6	-5	-2	1	5	7	3	-6	-14
250	-13	-13	-11	-9	-8	-9	-9	-7	-6	-4	-2	2	7	7	2	-14	-15
500	-8	-8	-7	-7	-7	-6	-6	-4	-3	-2	0	2	6	6	-5	-20	-19
1000	-8	-5	-5	-5	-5	-5	-5	-4	-2	-1	2	5	2	6	-7	-23	-25
2000	-7	-4	-6	-4	-5	-6	-5	-3	-1	2	3	5	1	2	-8	-21	-24
4000	-7	-4	-4	-4	-4	-4	-3	-2	0	1	4	4	1	2	-9	-23	-26
8000	-5	1	-1	-1	-0	-1	-1	-0	0	2	3	4	-1	-1	-9	-25	-27
OVERALL	-11	-9	-8	-8	-7	-8	-7	-6	-4	-3	-0	2	6	7	-0	-8	-12

TABLE: DIRECTIVITY INDEX (DB)															IDENTIFICATION:														
NOISE SOURCE/SUBJECT:															METEOROLOGY:														
(OPERATION:)															()														
(MILITARY POWER)															()														
(100% RPM)															()														
(SINGLE ENGINE)															()														
(FREE FLOW)															()														
FREQ															ANGLE (DEGREES)														
(HZ)															()														
1/3 OCTAVE																													
25																													
31.5																													
40																													
50																													
63																													
80																													
100																													
125																													
160																													
200																													
250																													
315																													
400																													
500																													
630																													
800																													
1000																													
1250																													
1600																													
2000																													
2500																													
3150																													
4000																													
5000																													
6300																													
8000																													
10000																													
OCTAVE																													
31.5																													
63																													
125																													
250																													
500																													
1000																													
2000																													
4000																													
8000																													
16000																													
OVERALL																													

FIGURE: OVERALL SOUND PRESSURE LEVEL {OASPL}
EQUAL LEVEL CONTOURS (DB)

5

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-008

RUN 01

15 APR 75

PAGE 13

METEOROLOGY:

TEMP = 15 C

BAR PRESS = .760 M HG

REL HUMID = 70 %

(OPERATION:

1015

46% RPM

() BOTH ENGINES

NOISE SOURCE/SUBJECT:

0
1
0
0
4
1
0
0
0
0
0
1
0
0
4
0
0

A-378 AIRCRAFT

J85-GE-17A FNGT

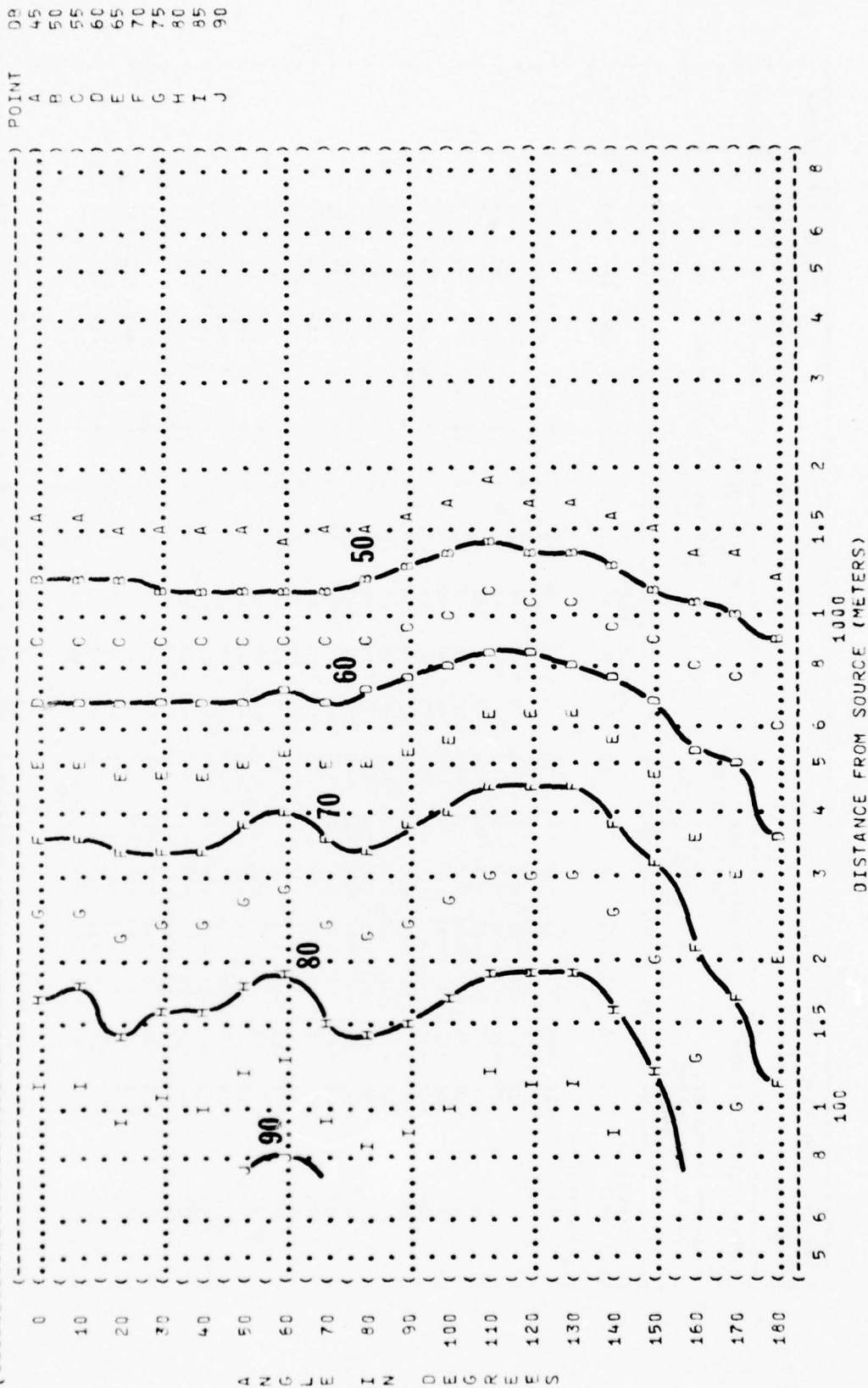
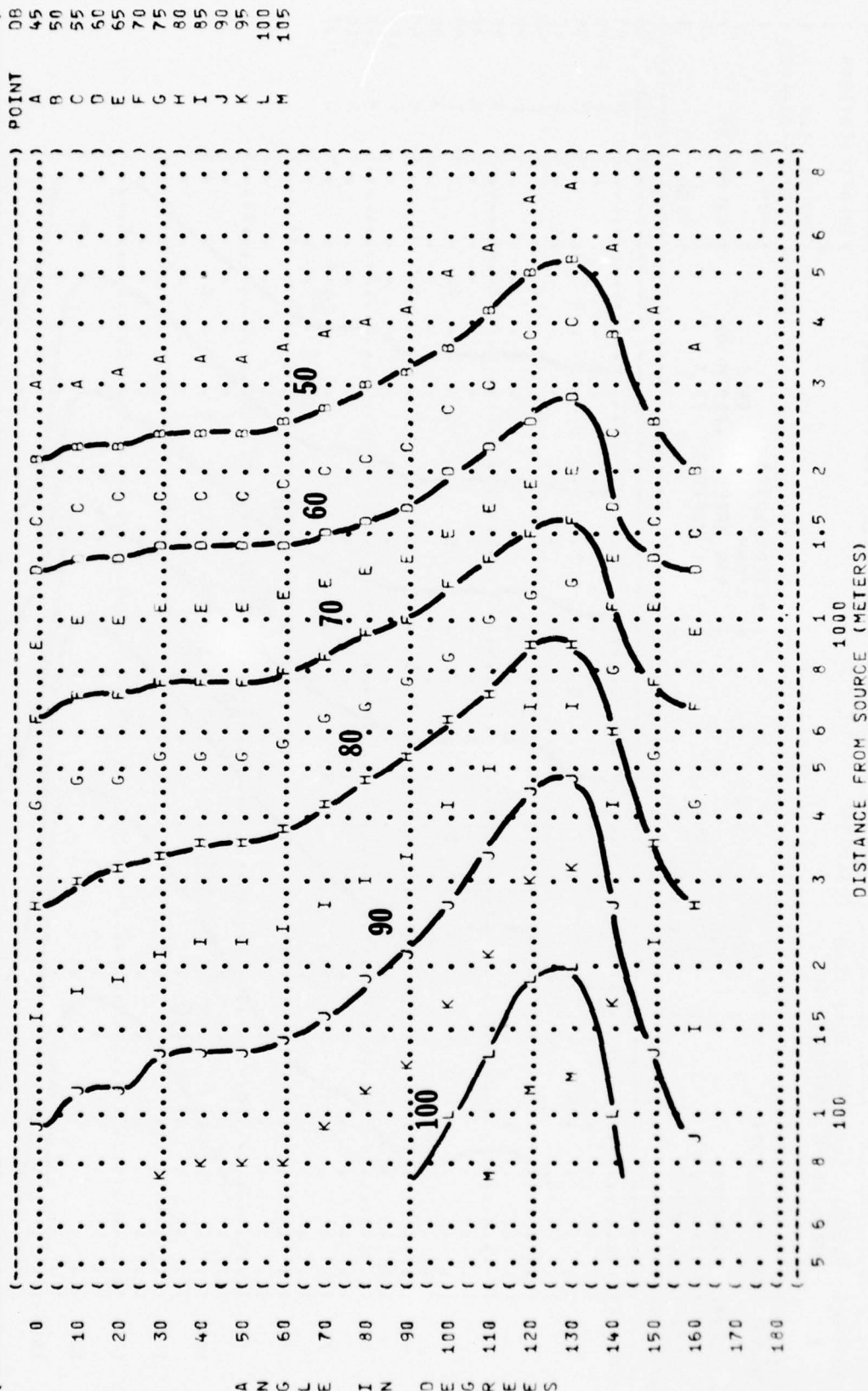


FIGURE: OVERALL SOUND PRESSURE LEVEL (OASPL)
 5
 EQUAL LEVEL CONTOURS (DB)

NOISE SOURCE/SUBJECT: () OPERATION: () METEOROLOGY: ()
 () A-378 AIRCRAFT () 85% RPM () TEMP = 15 C
 () J85-GE-17A ENGINE () BOTH ENGINES () BAR PRESS = .760 M HG
 () FAR FIELD NOISE () FREE FLOW () REL HUMID = 70 %

IDENTIFICATION:
 () OMEGA 1.4
 () TEST 75-002-053
 () RUN 01
 () 13 MAY 75
 () PAGE 13



0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

POINT
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O

50
60
70
80
90
100
110
120

1	2	3	4	5	6	8	1	1.5	2	3	4	5	6	8
6	6	8	1	1.5	2	3	4	5	6	8	1	1.5	2	3

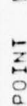
28

FIGURE 1: C-WEIGHTED OVERALL SOUND LEVEL (OASLC) EQUAL LEVEL CONTOURS (DBC)

IDENTIFICATION:

5

RUN 01

METEOROLOGY:
TEMP

DISTANCE FROM SOURCE (METERS)

IDENTIFICATION:

OMEGA 1.4

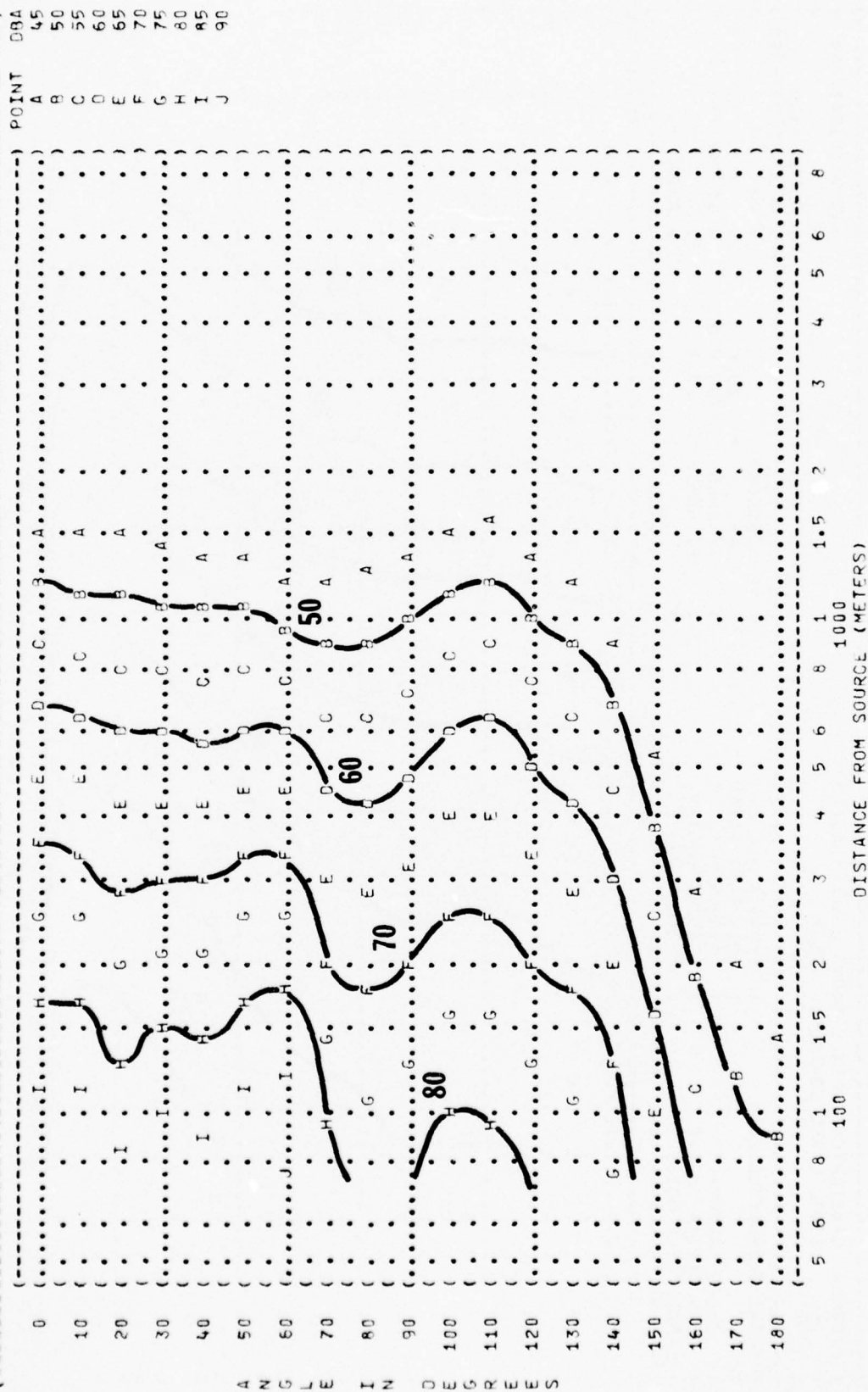
3) METEOROLOGY:

TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

PAGE 14



FIGURE	A-WEIGHTED OVERALL SOUND LEVEL (OASLA)	EQUAL LEVEL CONTOURS (DBA)	NOISE SOURCE/SUBJECT	OPERATION	METEOROLOGY	IDENTIFICATION
7			A-37B AIRCRAFT	IDLE	TEMP = 15 C	OMEGA 1.4
			J85-GE-17A ENGINE	46% RPM	BAR PRESS = .760 M HG	TEST 75-002-008
			FAR FIELD NOISE	80TH ENGINES	REL HUMID = 70 %	RUN 01
				FREE FLOW		PAGE 15



(FIGURE: A-WEIGHTED OVERALL SOUND LEVEL (OASLA)
 (7
 (EQUAL LEVEL CONTOURS (DBA)
 () IDENTIFICATION:
 ()
 () OMEGA 1.4
 () TEST 75-002-053
 () RUN 02
 ()
 (NOISE SOURCE/SUBJECT:) METEOROLOGY:
 ()) TEMP = 15 C
 ()) BAR PRESS = .760 M HG
 ()) REL HUMID = 70 %
 ())
 ())
 ()) PAGE 15
 ())

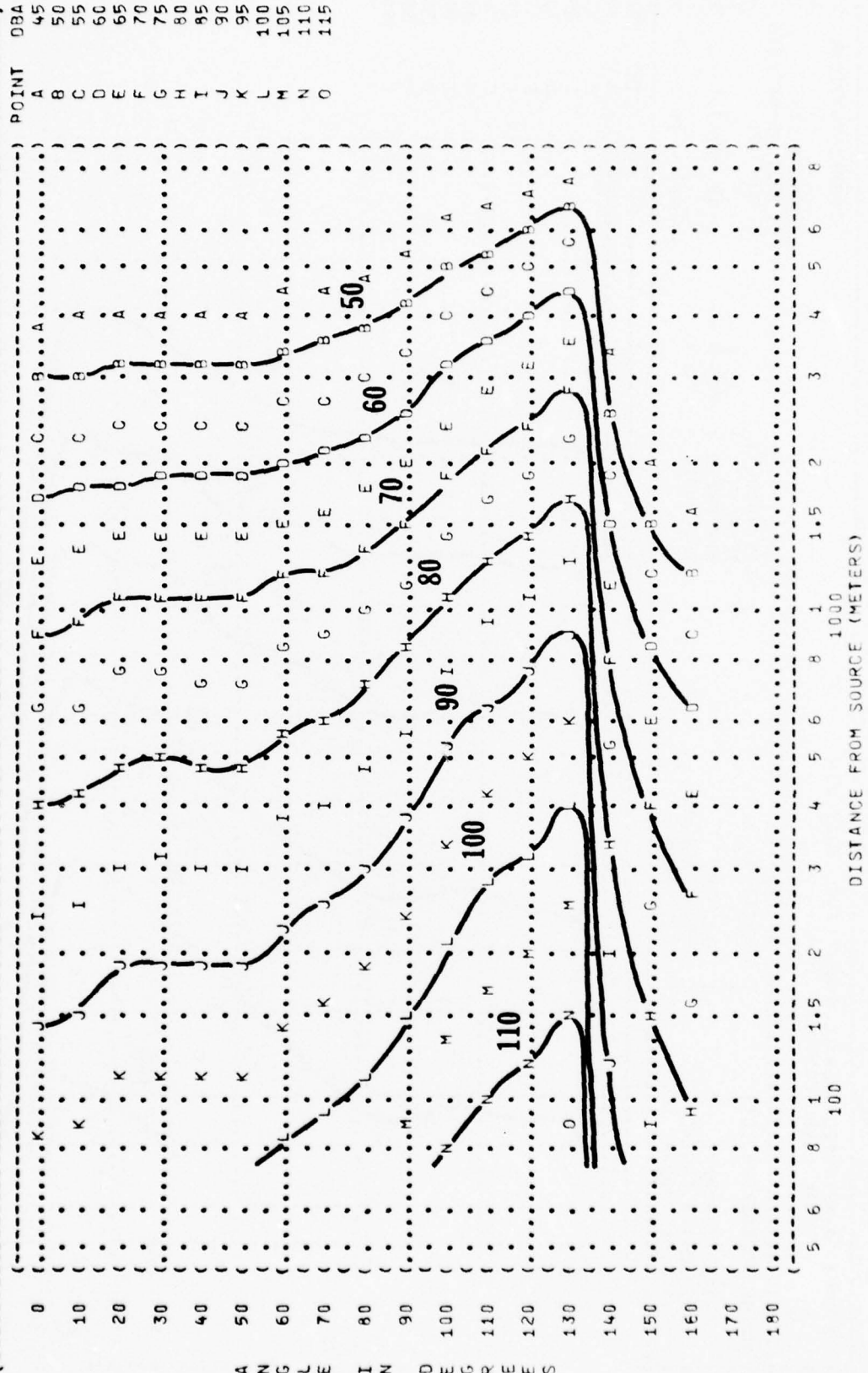
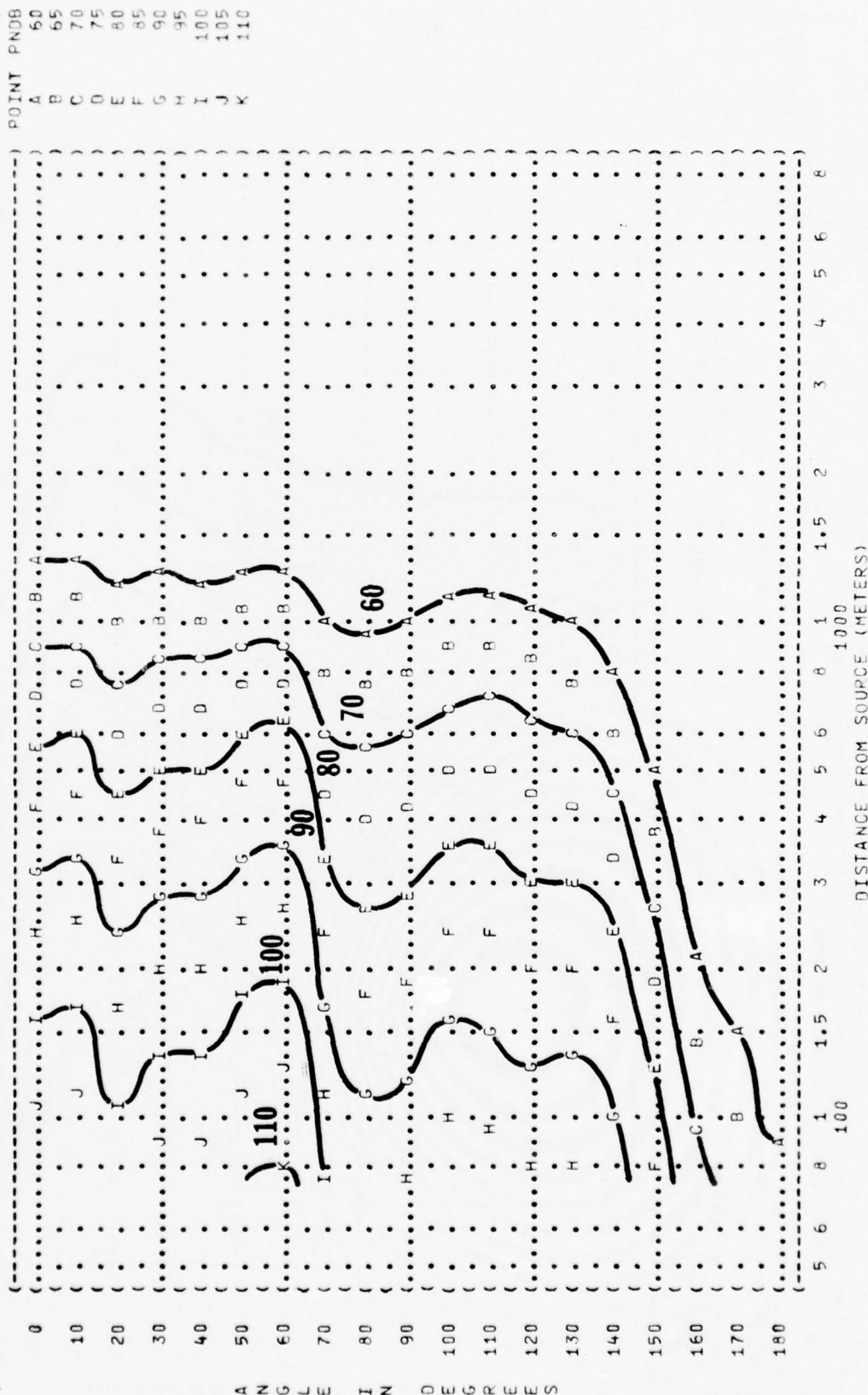


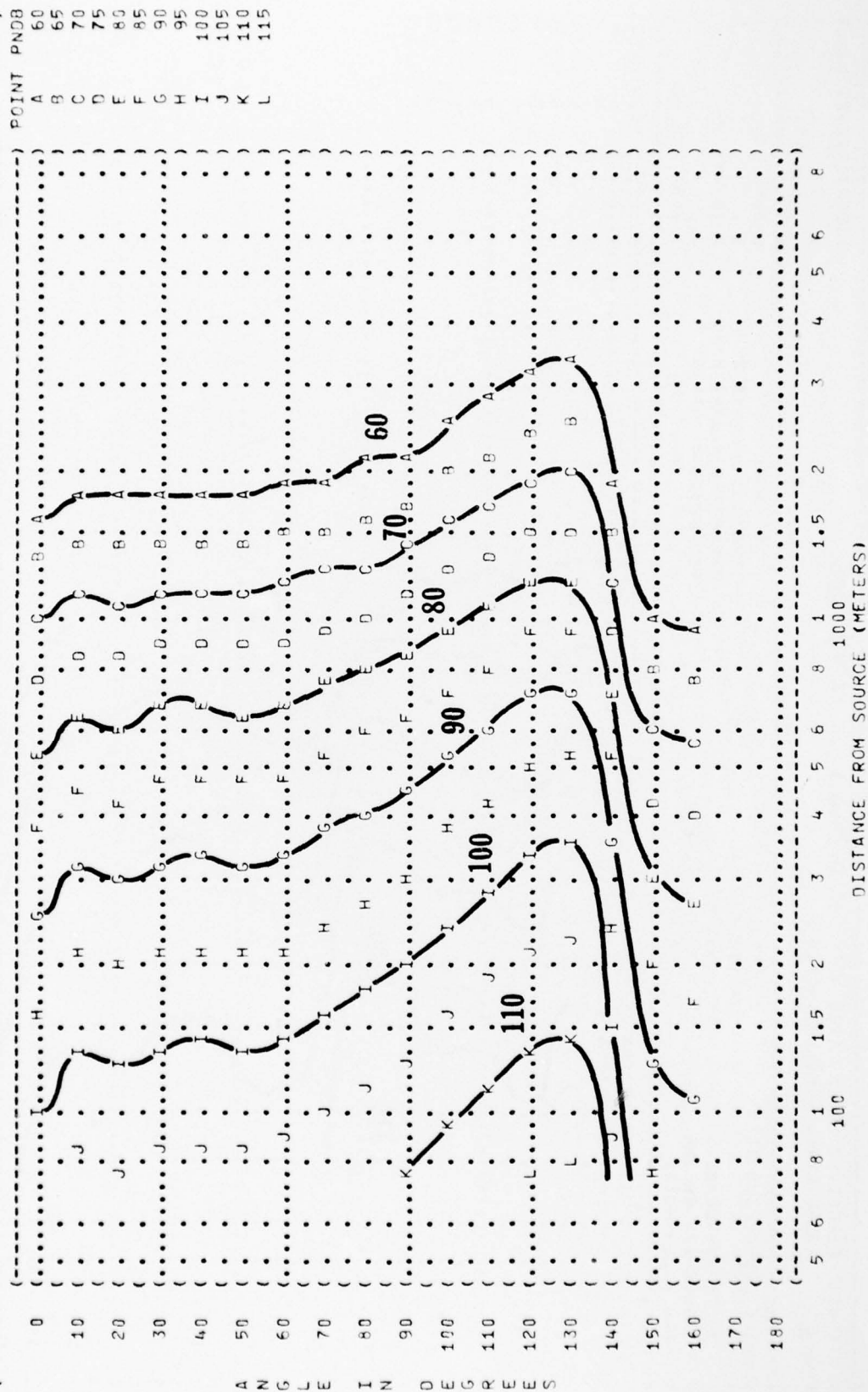
FIGURE: PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT)
 8
 EQUAL LEVEL CONTOURS (PNDB)

NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:) IDENTIFICATION:)
 ((IDLE) TEMP = 15 C) OMEGA 1.4
 (A-37B AIRCRAFT (46% RPM) BAR PRESS = .760 M HG) TEST 75-002-008
 (J85-GE-17A ENGINE (BOTH ENGINES) REL HUMID = 70 %) RUN 01
 (FAR FIELD NOISE (FREE FLOW)) 15 APR 75
) PAGE 16)

POINT PNDB
 A 60
 B 65
 C 70
 D 75
 E 80
 F 85
 G 90
 H 95
 I 100
 J 105
 K 110



((FIGURE: PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT)) IDENTIFICATION:)
 ((EQUAL LEVEL CONTOURS (PNDB)))
 ((8))
 ((NOISE SOURCE/SUBJECT:) OPERATION:) METEOROLOGY:)
 ((A-378 AIRCRAFT) (85% RPM)) TEMP = 15 C)
 ((J85-GE-17A ENGINE) (BOTH ENGINES)) BAR PRESS = .760 M HG)
 ((FAR FIELD NOISE) (FREE FLOW)) REL HUMID = 70 %)
 (())) TEST 75-002-053)
 (())) RUN 01)
 (())) 13 MAY 75)
 (())) PAGE 16)



A N G L E I N D E S C R E E S

EQUAL LEVEL CONTOURS (PNDB)

8

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-053

RUN 02

METEOROLOGY:

TEMP

BAR PRESS = .760 M HG

REL HUMID = 70 %

(OPERATION:

(M) MILITARY POWER

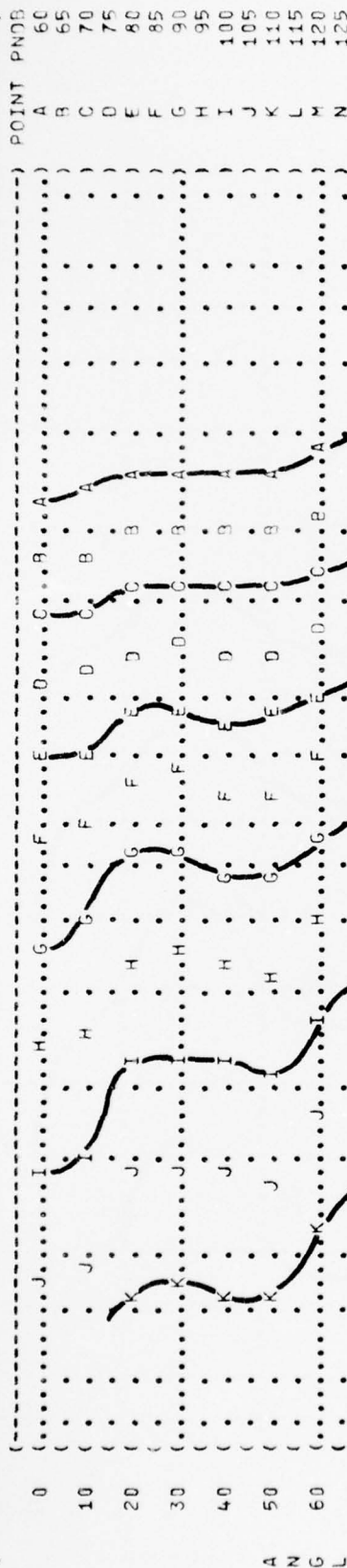
(100% RPM

(SINGLE ENG

NOISE SOURCE/SUBJECT:

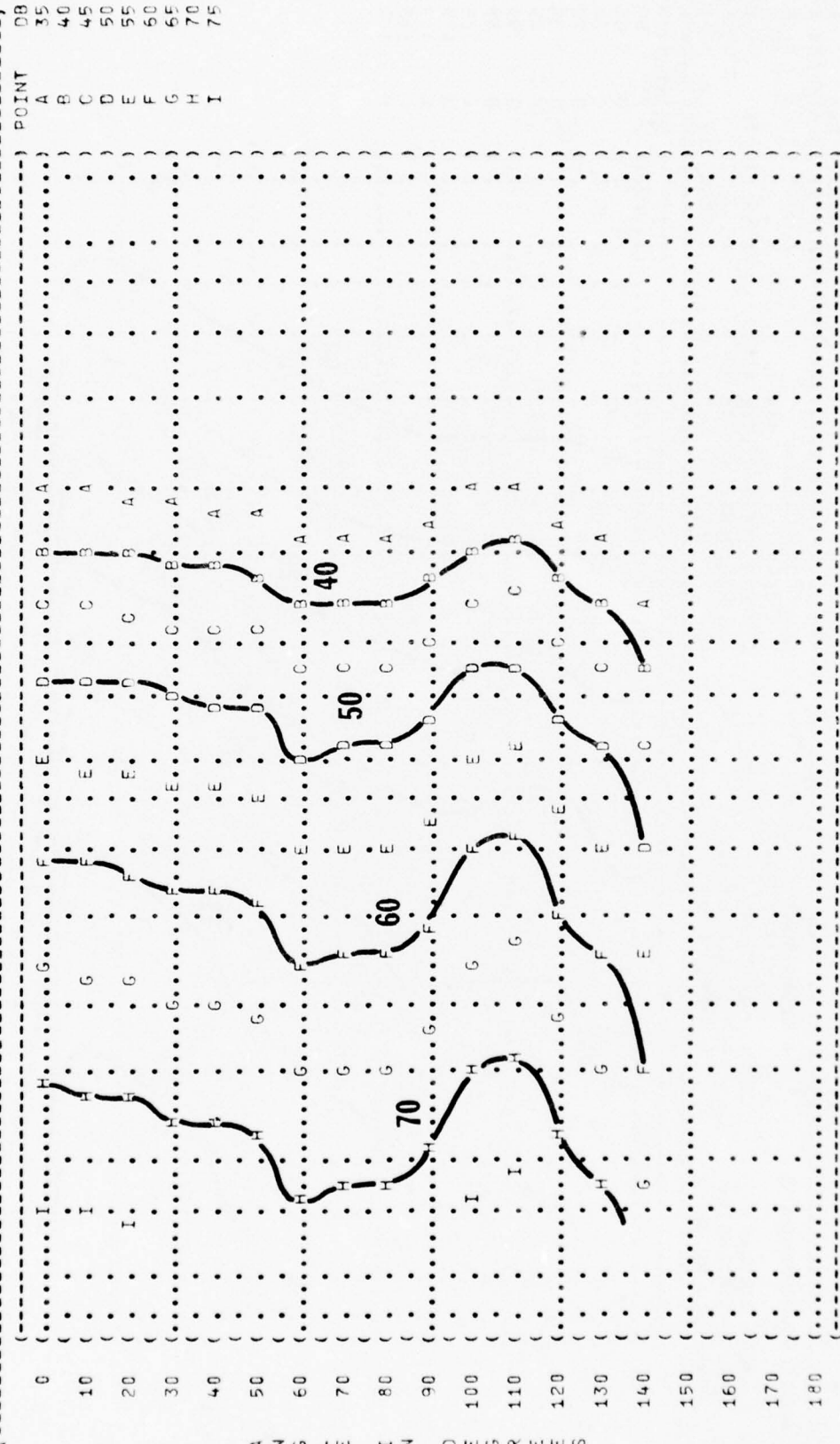
A-378 AIRCRAFT

J85-GE-17A ENGI



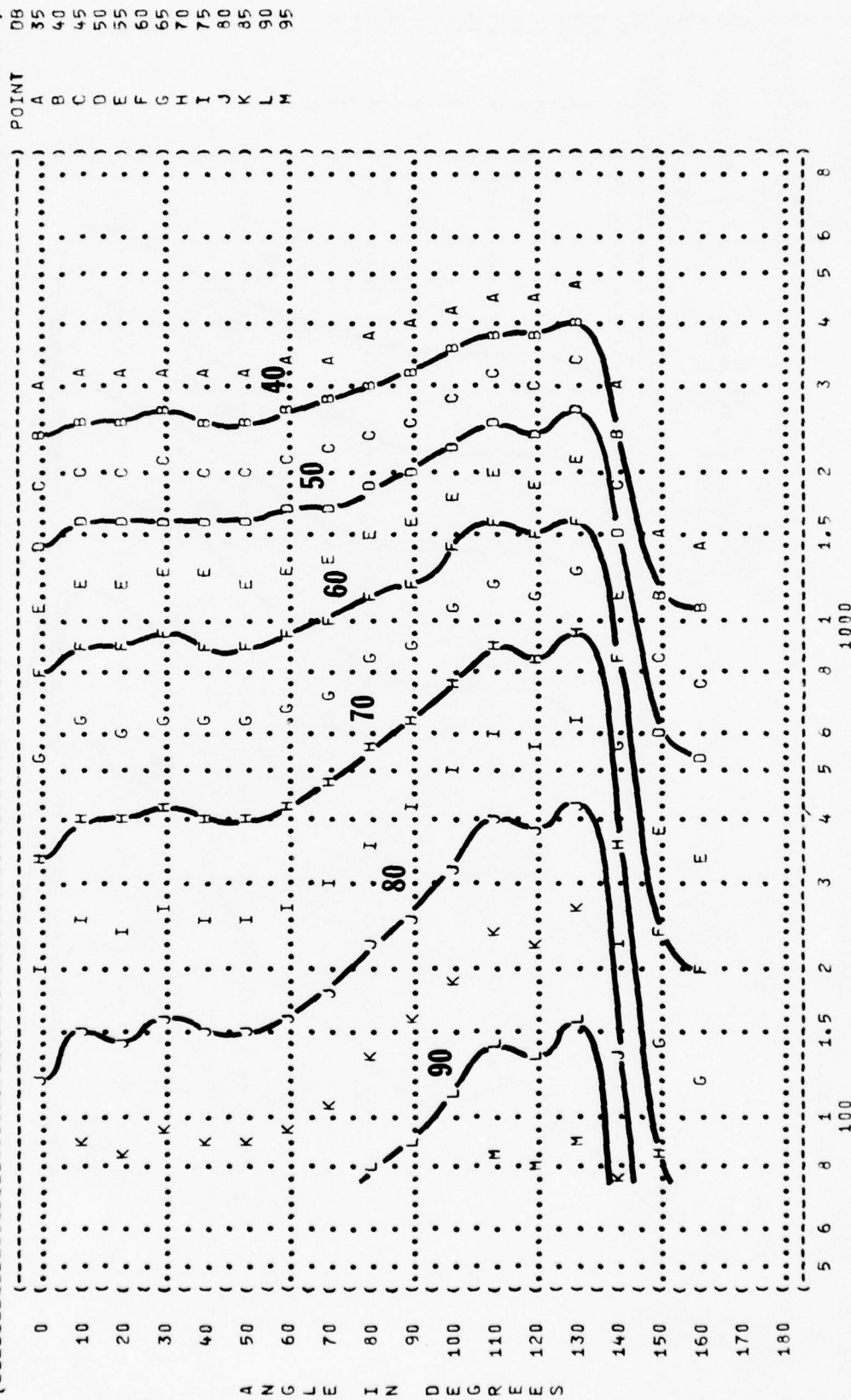
DISTANCE FROM SOURCE (METERS)

(FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)
 (9 EQUAL LEVEL CONTOURS (DB)
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST 75-002-008
 () RUN 01
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = .760 M HG
 () REL HUMID = 70 %
 () 15 APR 75
 () PAGE 17
 () NOISE SOURCE/SUBJECT:
 () OPERATION:
 () IDLE
 () 46% RPM
 () BOTH ENGINES
 () FREE FLOW
 () A-37E AIRCRAFT
 () J85-GE-17A ENGINE
 () FAR FIELD NOISE

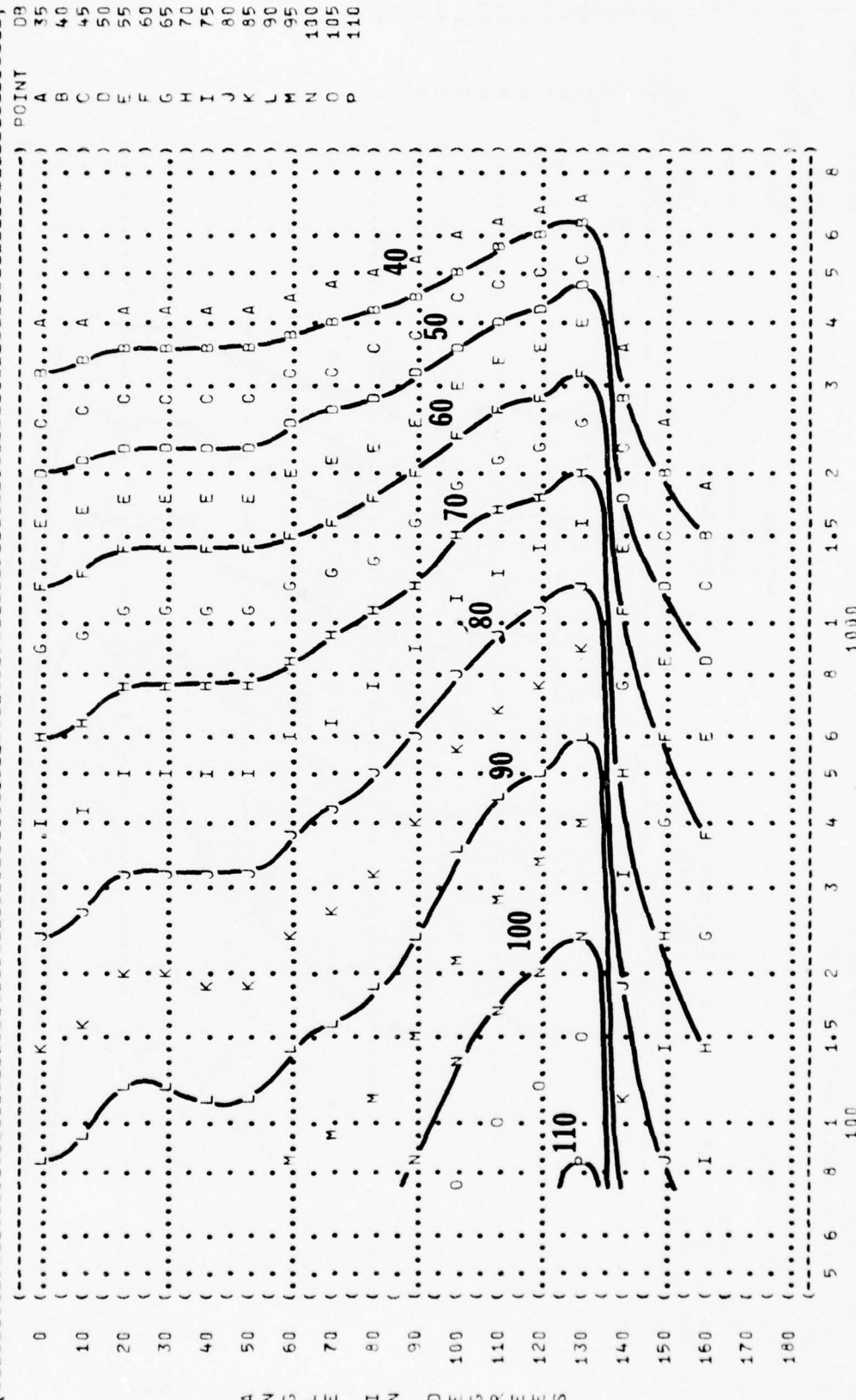


DISTANCE FROM SOURCE (METERS)

FIGURE: 9
 IDENTIFICATION:
 OMEGA 1.4
 TEST 75-002-053
 RUN 01
 13 MAY 75
 PAGE 17
 METEOROLOGY:
 TEMP = 15 C
 BAR PRESS = .760 M HG
 REL HUMID = 70 %
 OPERATION:
 85% RPM
 BOTH ENGINES
 FREE FLOW
 NOISE SOURCE/SUBJECT:
 A-378 AIRCRAFT
 J85-GE-17A ENGINE
 FAR FIELD NOISE



() FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL)
 () 9
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST 75-002-053
 () RUN 02
 () NOISE SOURCE/SUBJECT: () METEOROLOGY:
 () A-37B AIRCRAFT () TEMP = 15 C
 () J85-GE-17A ENGINE () BAR PRESS = .760 M HG
 () FAR FIELD NOISE () REL HUMID = 70 %
 () PAGE 17



ANGLE IN DEGREES

MIN POINT

960
480
240

A
B
C

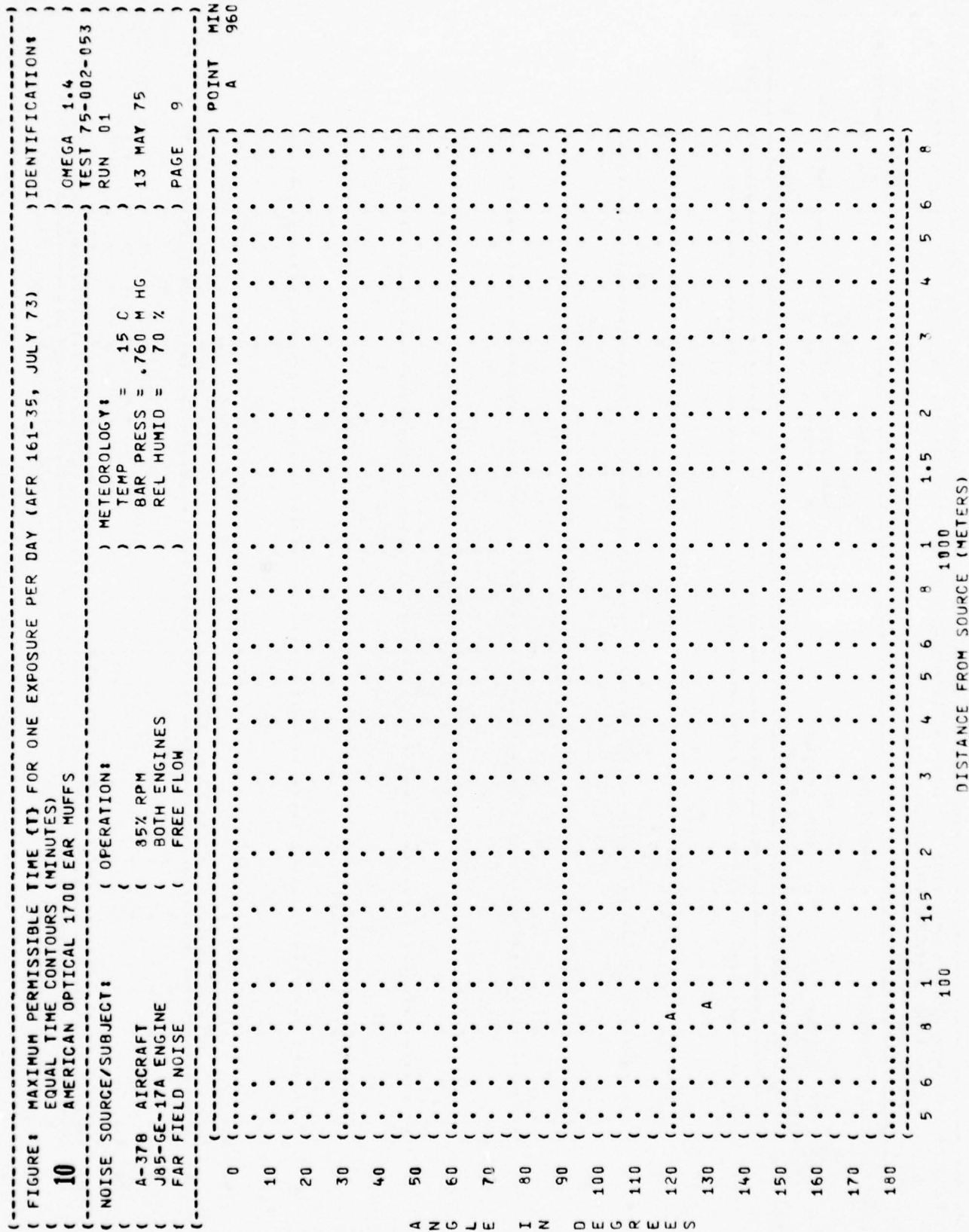
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

A N G L E I N D E G R E E S

A B C

480

[illegible]



PERSONNEL MAY BE EXPOSED UP TO 960 MINUTES PER DAY
AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 75 METERS
FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)
UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:

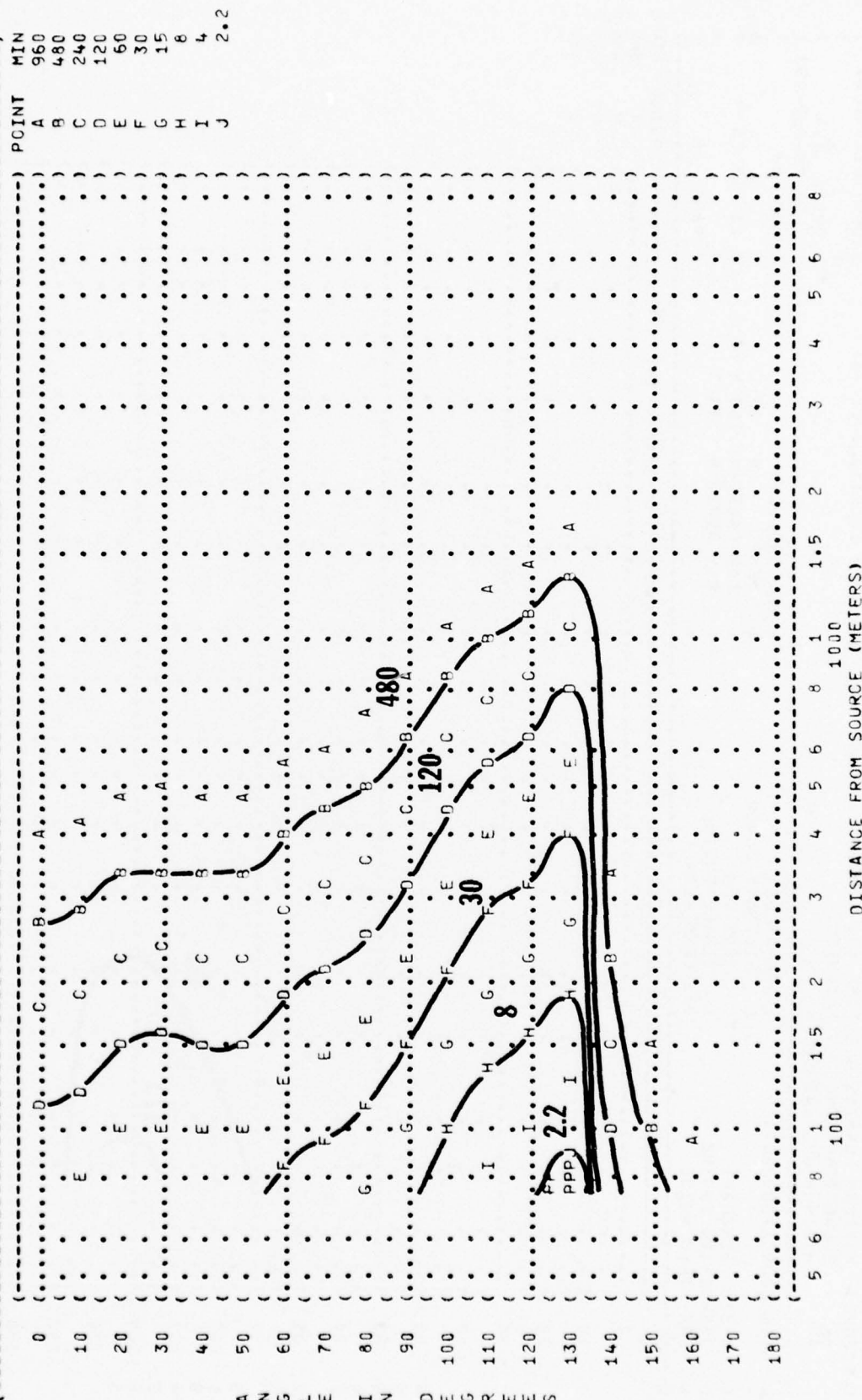
H-133 GROUND COMMUNICATION UNIT

H-133 GROUND COMMUNICATION UNIT

5 6 8 1 1.5 2 3 4 5 6 8 100 1000

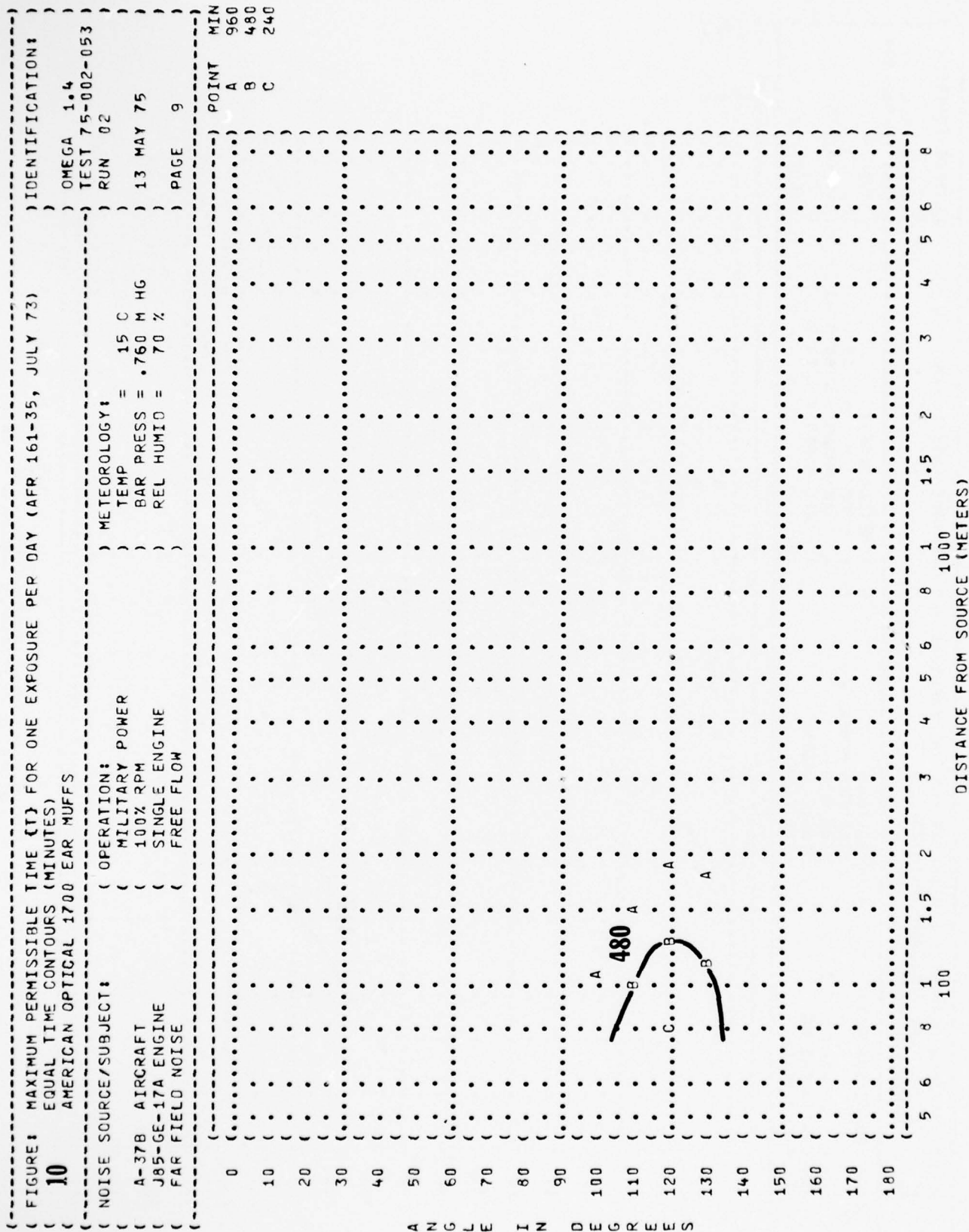
DISTANCE FROM SOURCE (METERS)

FIGURE	MAXIMUM PERMISSIBLE TIME (T)	FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)	IDENTIFICATION
10	EQUAL TIME CONTOURS (MINUTES)		
	NO PROTECTION		OMEGA 1.4
			TEST 75-002-053
	NOISE SOURCE/SUBJECT:	METEOROLOGY:	RUN 02
	(OPERATION:	TEMP = 15 C	
	(MILITARY POWER	BAR PRESS = .760 M HG	13 MAY 75
	(100% RPM	REL HUMID = 70 %	
	(SINGLE ENGINE		PAGE 7
	(FREE FLOW		
	A-37B AIRCRAFT		
	J85-GE-17A ENGINE		
	FAR FIELD NOISE		

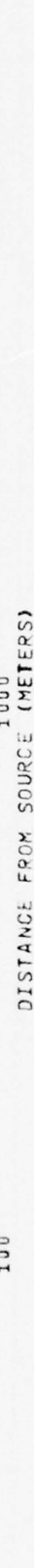


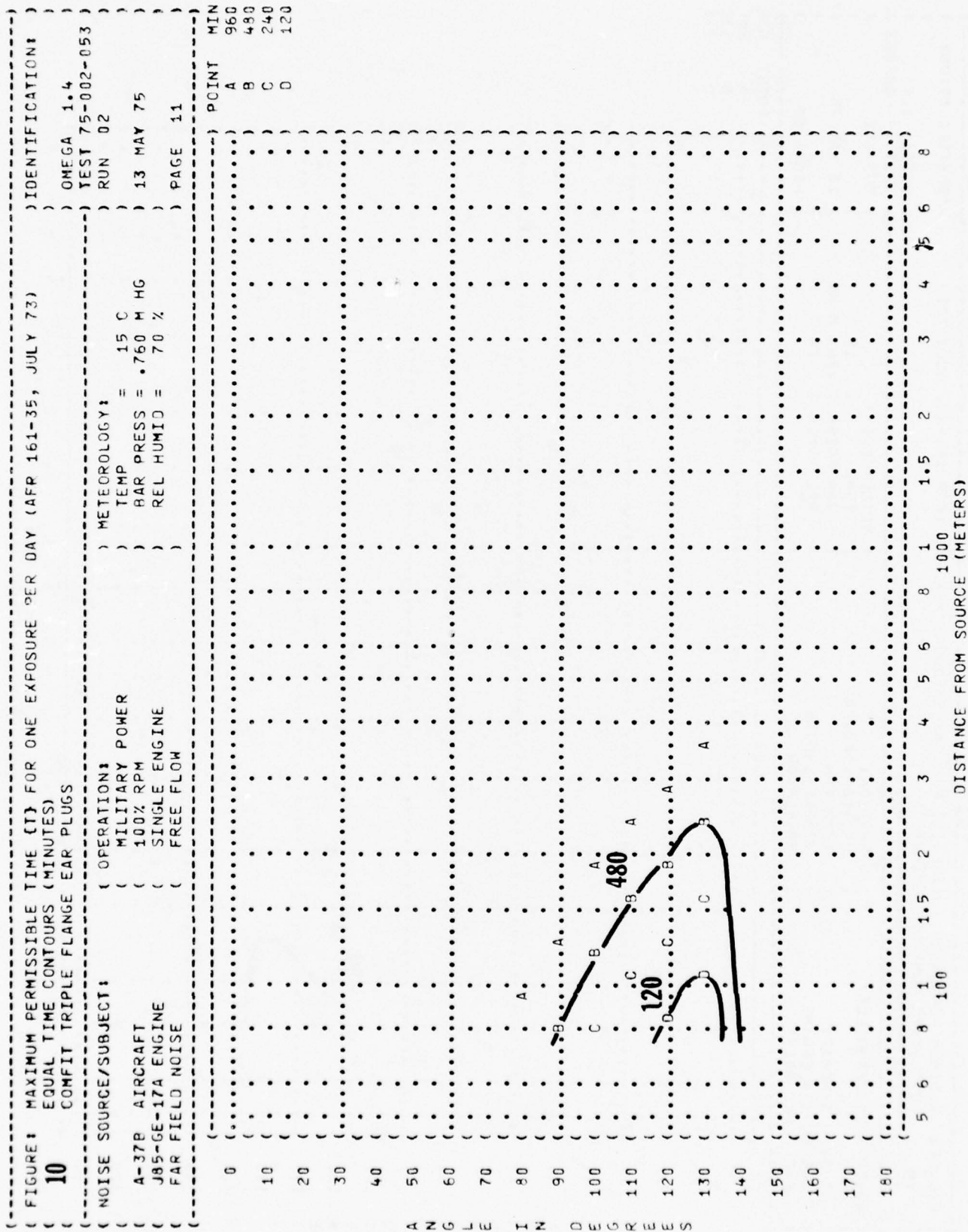
ADDITIONAL EAR PROTECTION REQUIRED.

	(	-	-	-	-	-	-	)	P O I N T	M I N	M A X
0	(	.	.	.	.	.	.	)	A	960	
	(	.	.	.	.	.	.	)	B	480	
10	(	.	.	.	.	.	.	)	C	240	
	(	.	.	.	.	.	.	)	D	120	

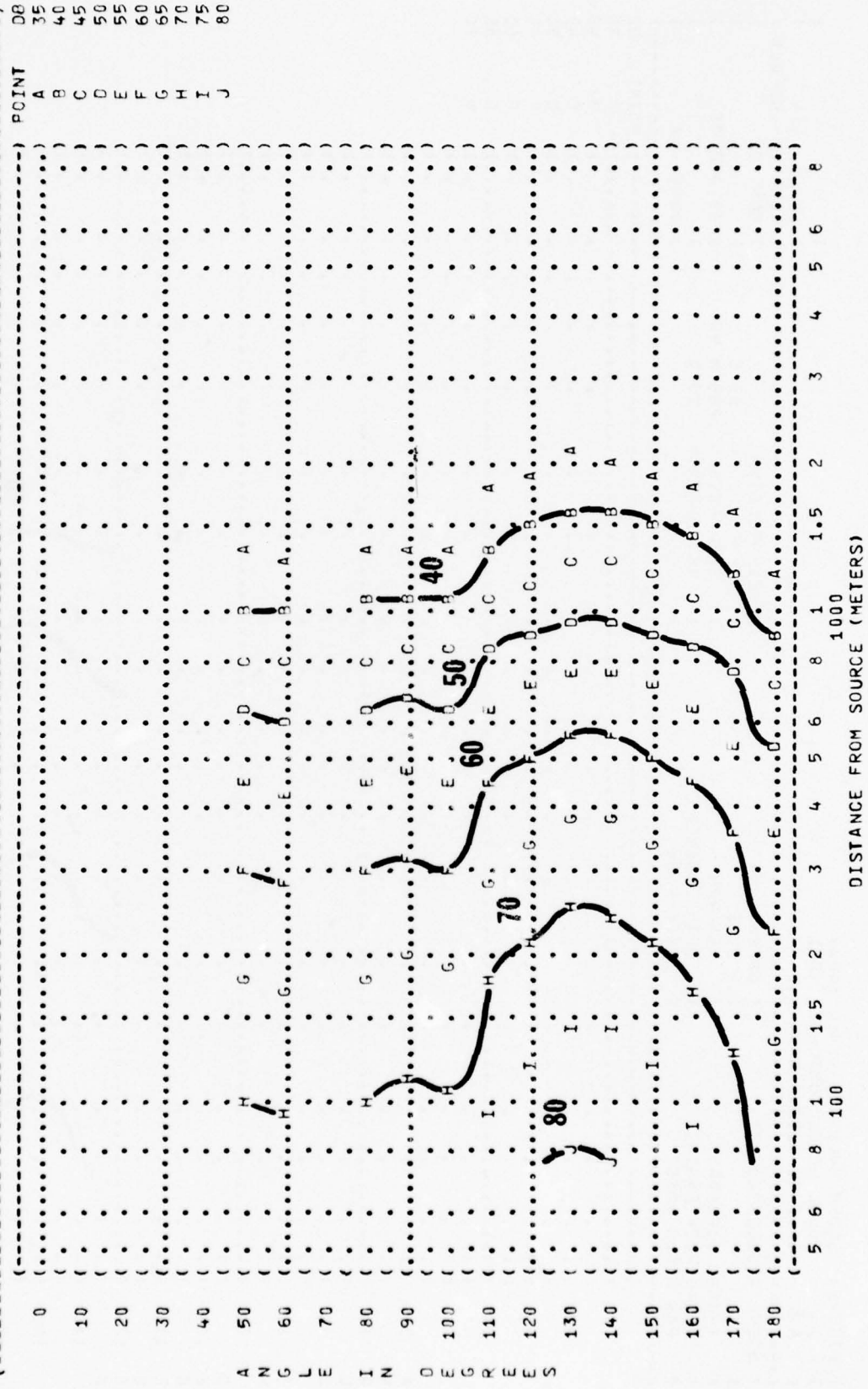


	MIN	POINT
0	960	A
10	480	B
20	240	C

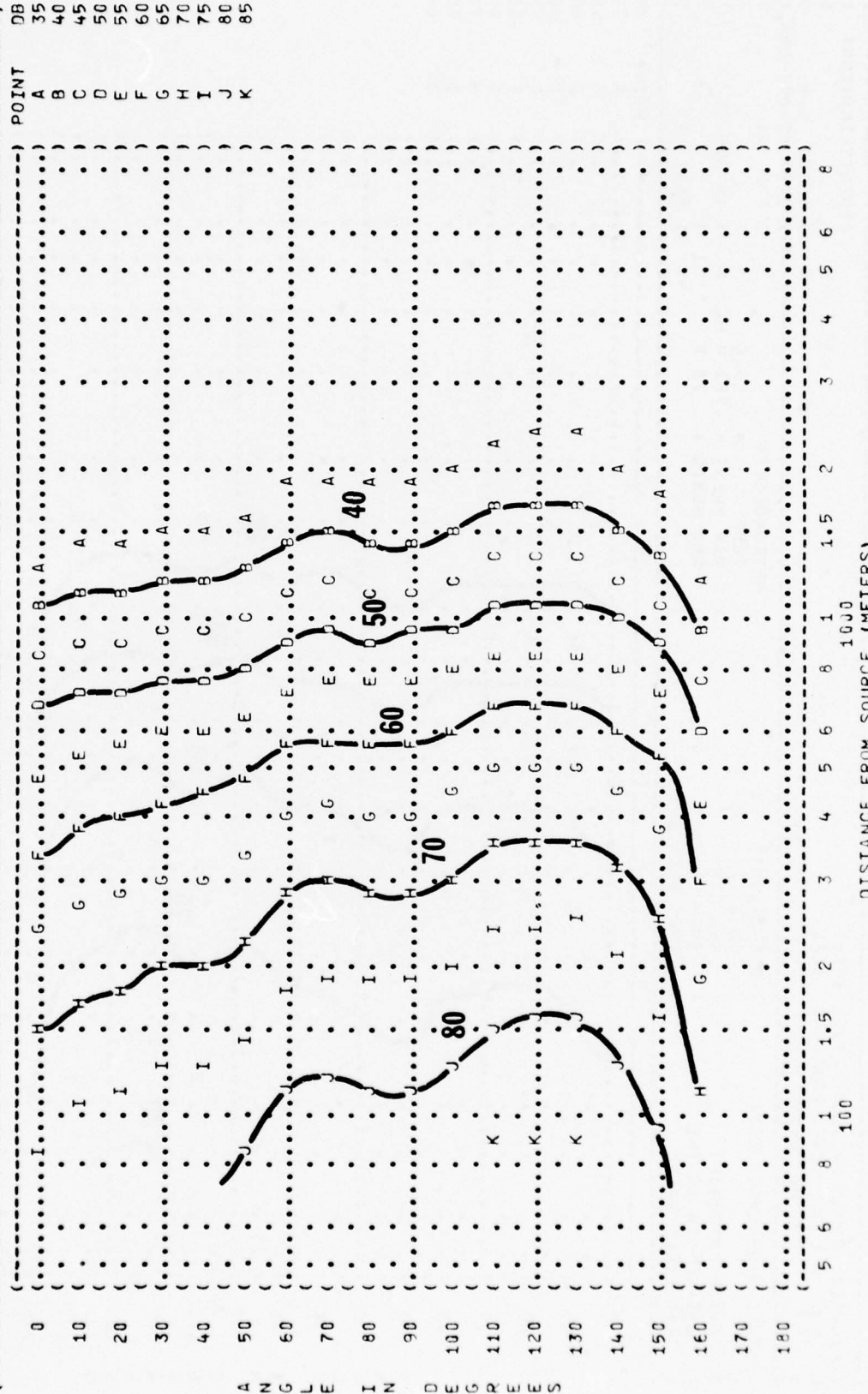




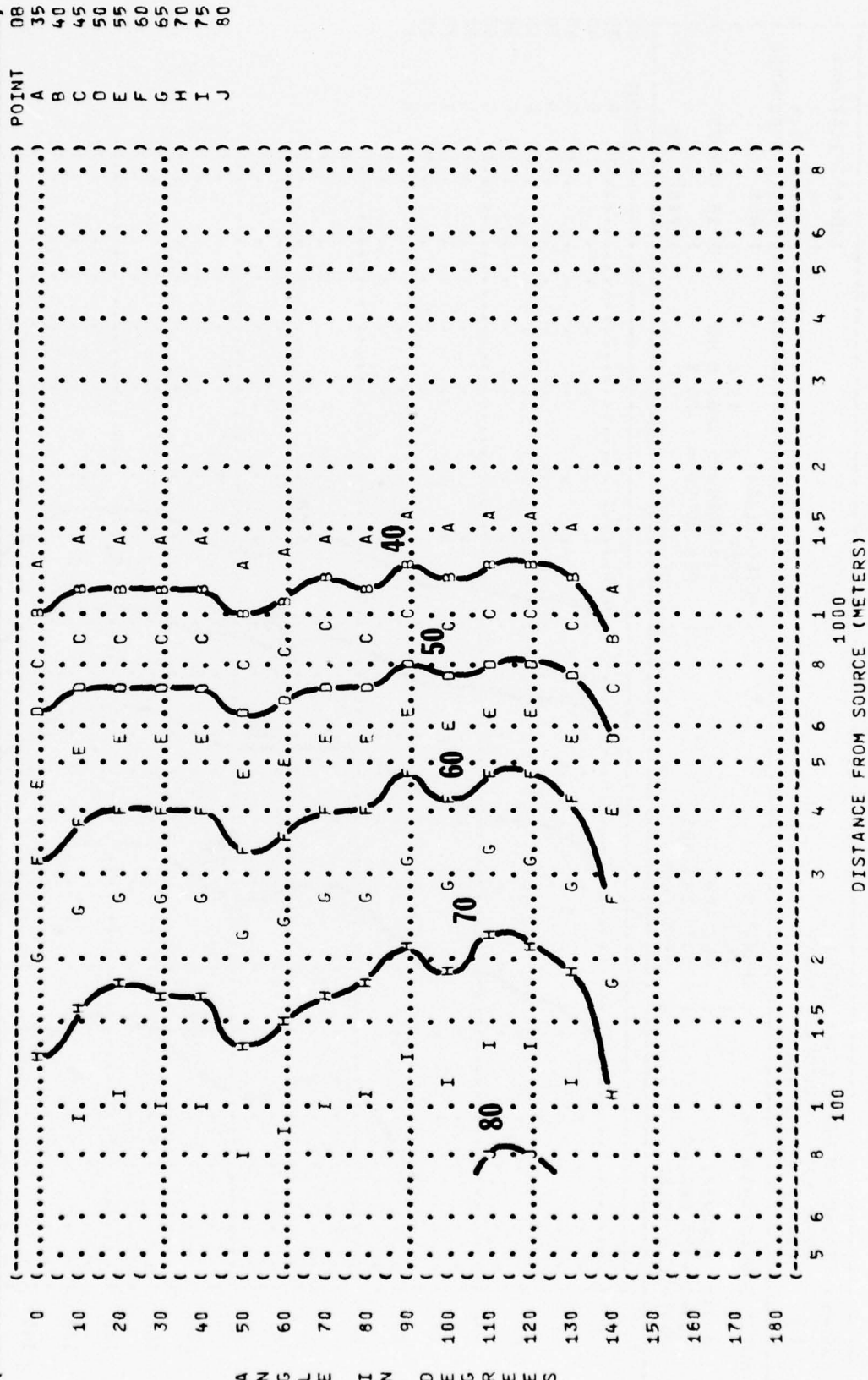
(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (11 63 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 ((IDLE
 (A-37B AIRCRAFT (46% RPM
 (J85-GE-17A ENGINE (80TH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY: (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION: (OMEGA 1.4
 (TEST 75-002-008
 (RUN 01
 (15 APR 75
 (PAGE 19



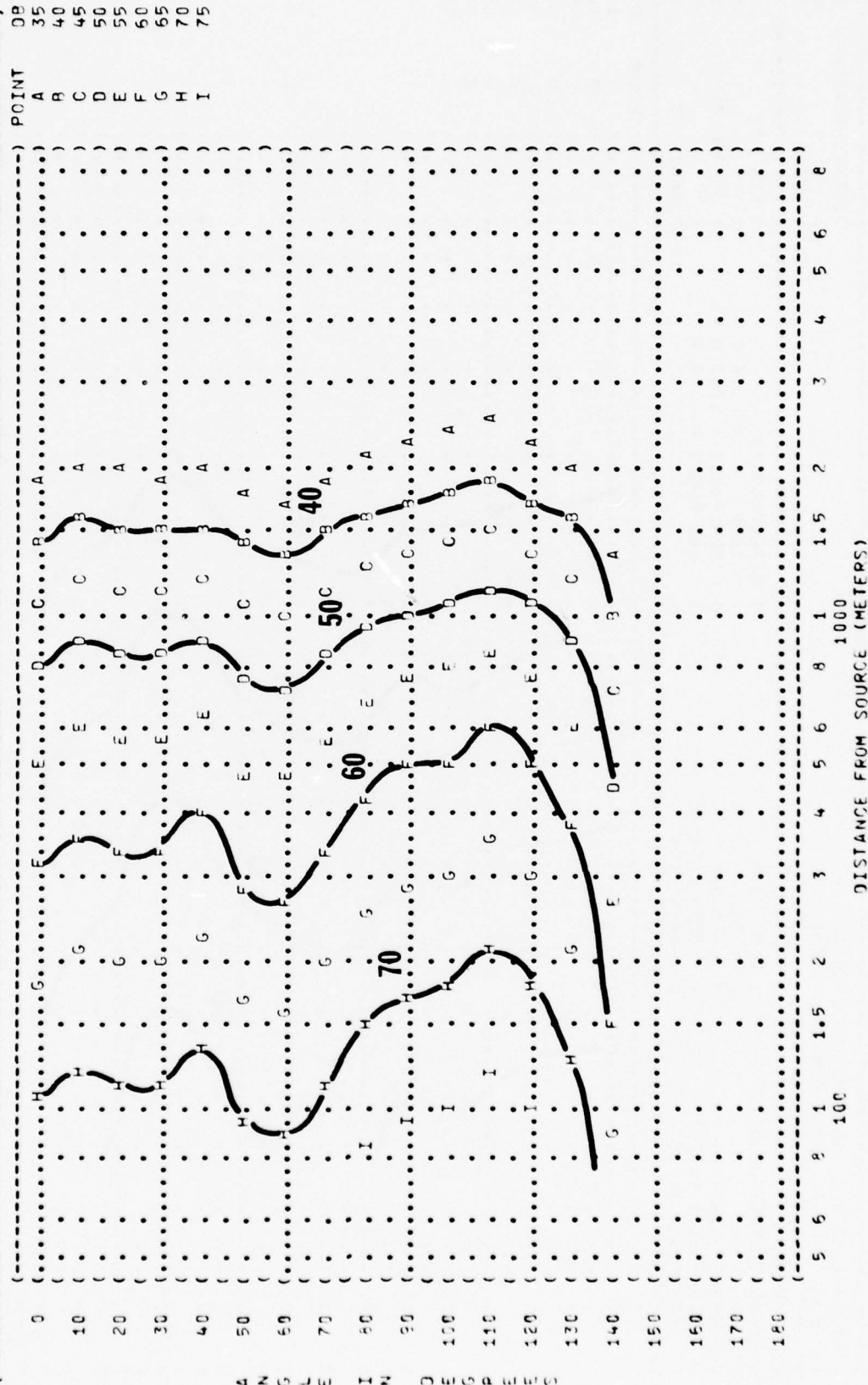
(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (11 EQUAL LEVEL CONTOURS (DB))
 (125 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (A-378 AIRCRAFT)
 (J85-GE-17A ENGINE)
 (FAR FIELD NOISE)
 (OPERATION:)
 (IDLE)
 (46% RPM)
 (BOTH ENGINES)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 75-002-008)
 (RUN 01)
 (15 APR 75)
 (PAGE 20)



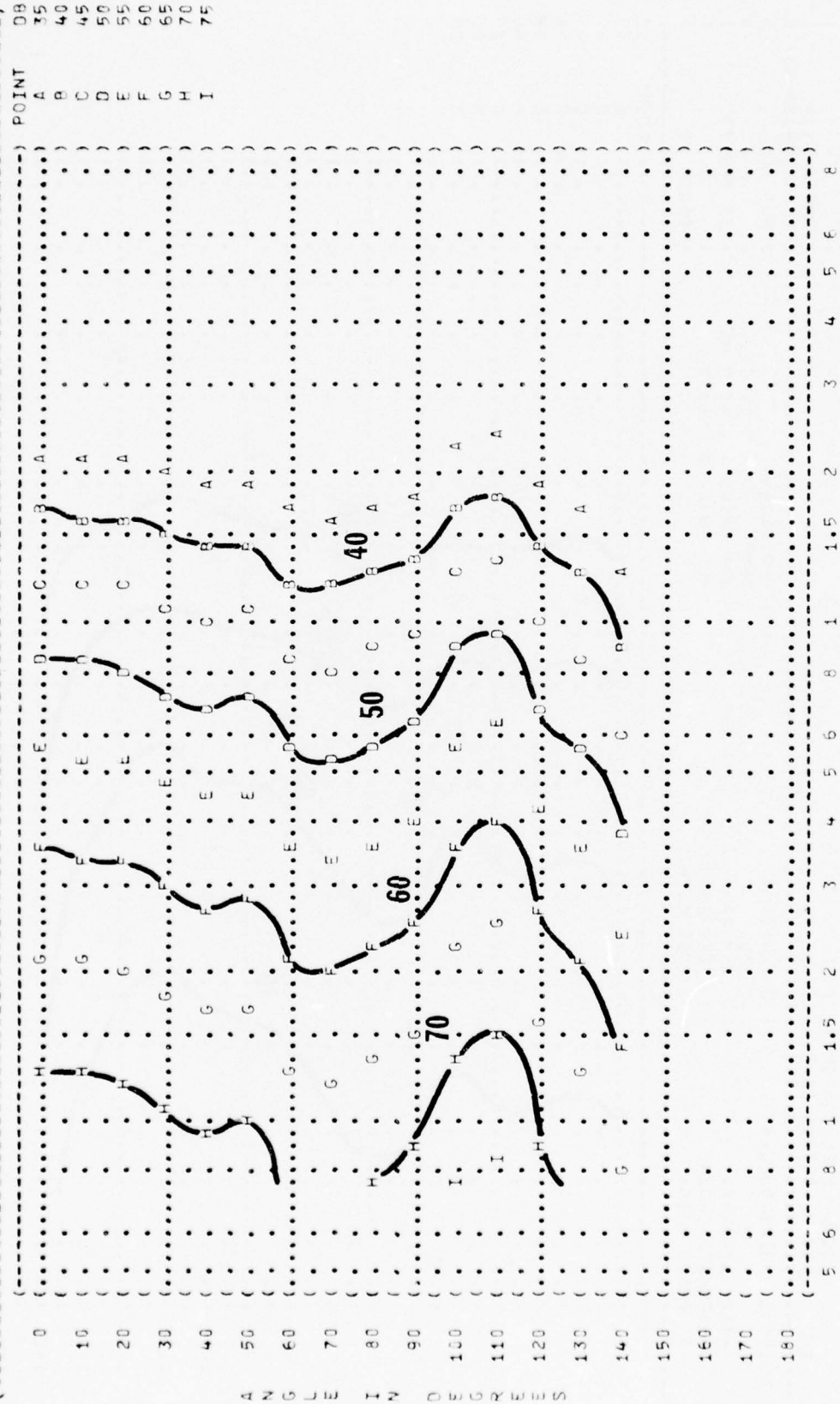
(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (250 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION: (METEOROLOGY: (IDENTIFICATION: ()
 (A-378 AIRCRAFT (IDLE (TEMP = 15 C (OMEGA 1.4
 (J85-GE-17A ENGINE (46% RPM (BAR PRESS = .760 M HG (TEST 75-002-008
 (FAR FIELD NOISE (BOTH ENGINES (REL HUMID = 70 % (RUN 01
 ((FREE FLOW (15 APR 75 ()
 ((((PAGE 21 ()



() FIGURE: SOUND PRESSURE LEVEL (SPL)
 () EQUAL LEVEL CONTOURS (DB)
 () 11 500 HZ OCTAVE BAND
 () NOISE SOURCE/SUBJECT:
 () OPERATION:
 () IDLE
 () 46% RPM
 () 30TH ENGINES
 () FREE FLOW
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = .760 M HG
 () REL HUMID = 70 %
 () IDENTIFICATION:
 () OMEGA 1.4
 () TEST 75-002-008
 () RUN 01
 () 15 APR 75
 () PAGE 22

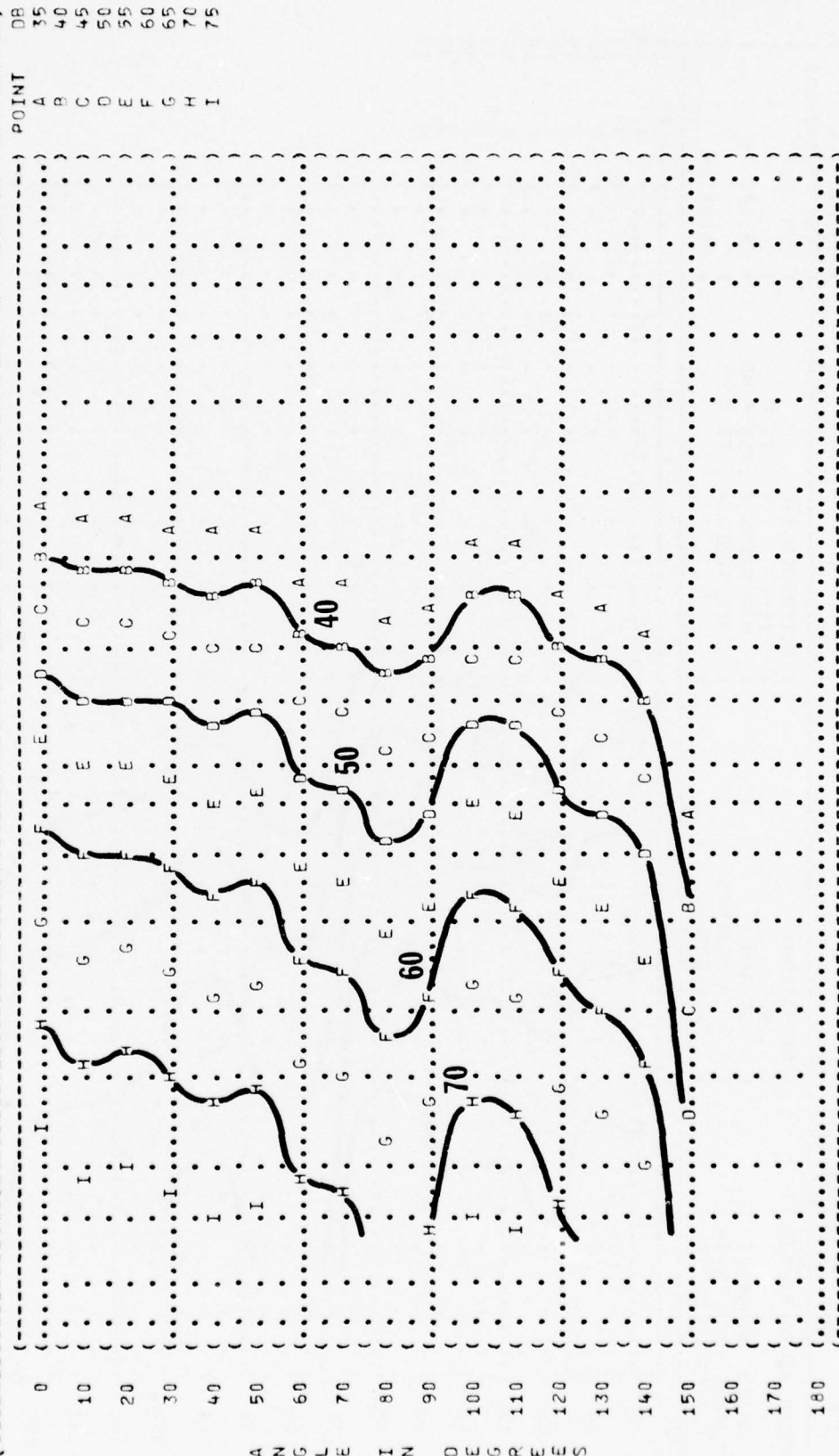


(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (11 EQUAL LEVEL CONTOURS (DB))
 (1000 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (A-37B AIRCRAFT)
 (J85-GE-17A ENGINE)
 (FAR FIELD NOISE)
 (OPERATION:)
 (IDLE)
 (46% RPM)
 (BOTH ENGINES)
 (FREE FLOW)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 75-002-008)
 (RUN 01)
 (15 APR 75)
 (PAGE 23)



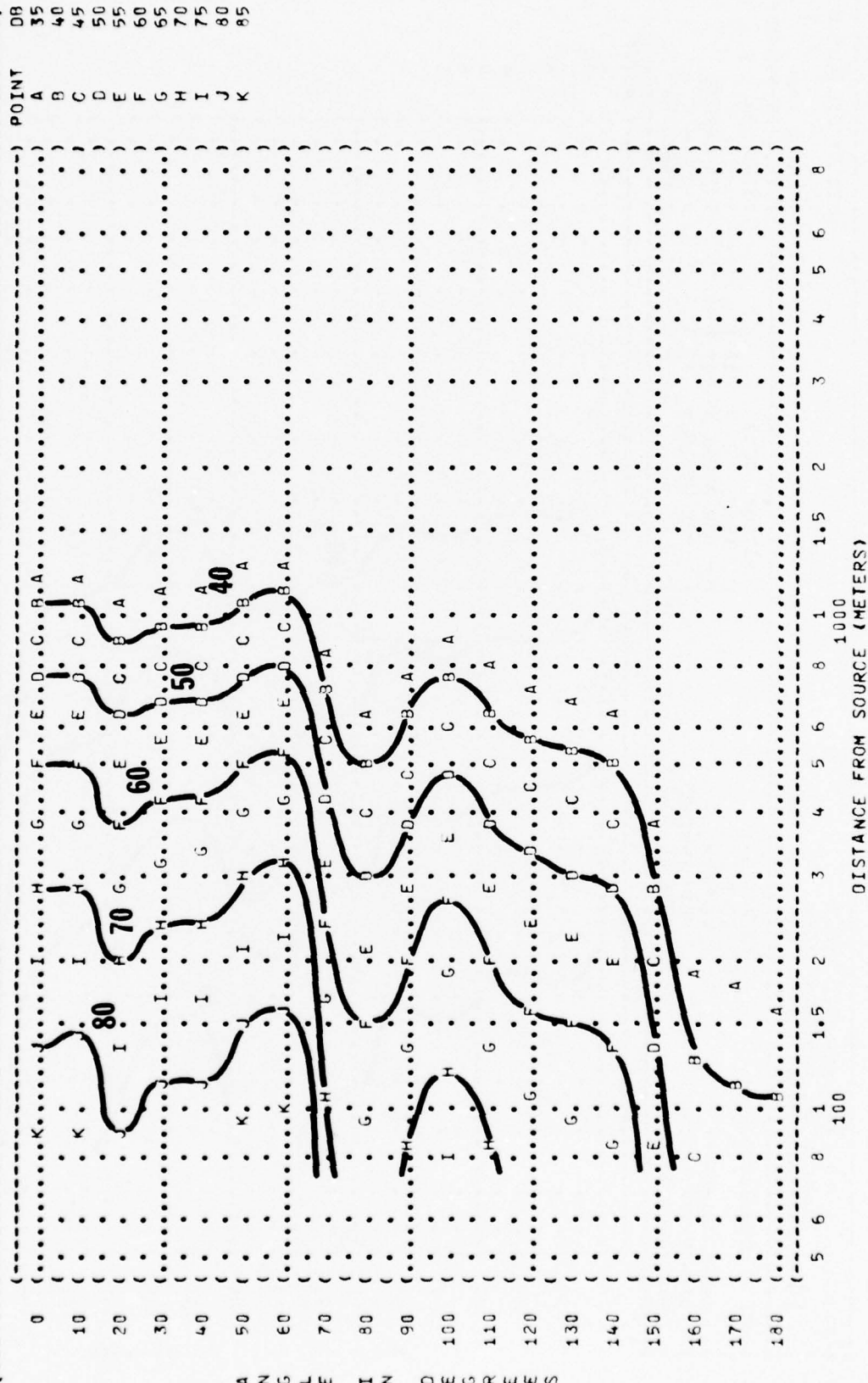
DISTANCE FROM SOURCE (METERS)

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (11 2000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (A-378 AIRCRAFT (IDLE
 (J85-GE-17A ENGINE (46% RPM
 (FAR FIELD NOISE (90TH ENGINES
 ((FREE FLOW
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 75-002-008
 (RUN 01
 (15 APR 75
 (PAGE 24
 (DB

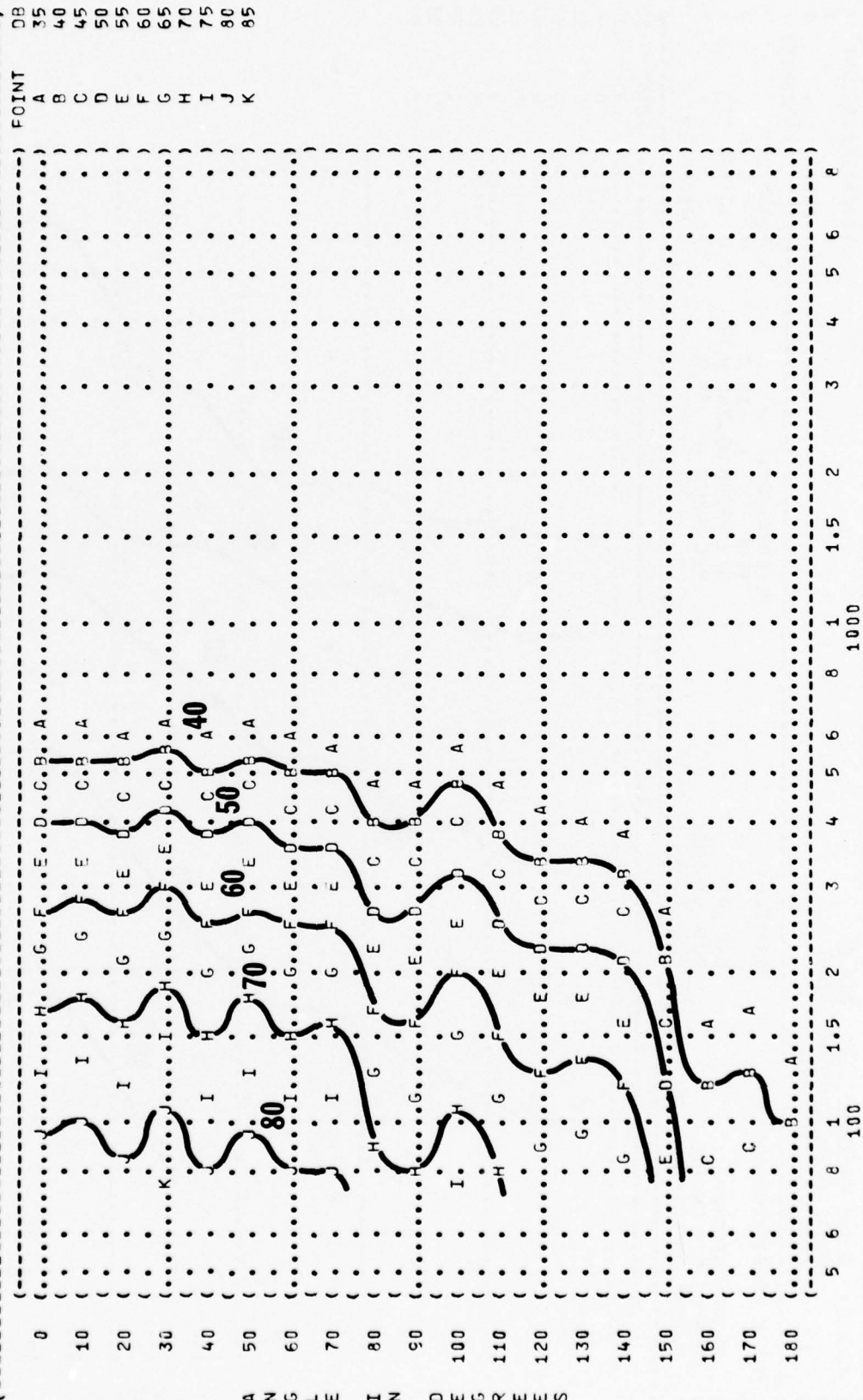


A N G L E
 I N D E G R E E S

(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (4000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 ((IDLE
 ((46% RPM
 ((BOTH ENGINES
 ((FREE FLOW
 (A-378 AIRCRAFT
 (J85-GE-17A ENGINE
 (FAR FIELD NOISE
 (IDENTIFICATION:
 () OMEGA 1.4
 (TEST 75-002-008
 (RUN 01
 () 15 APR 75
 () PAGE 25
 () METEOROLOGY:
 () TEMP = 15 C
 () BAR PRESS = 760 M HG
 () REL HUMID = 70 %

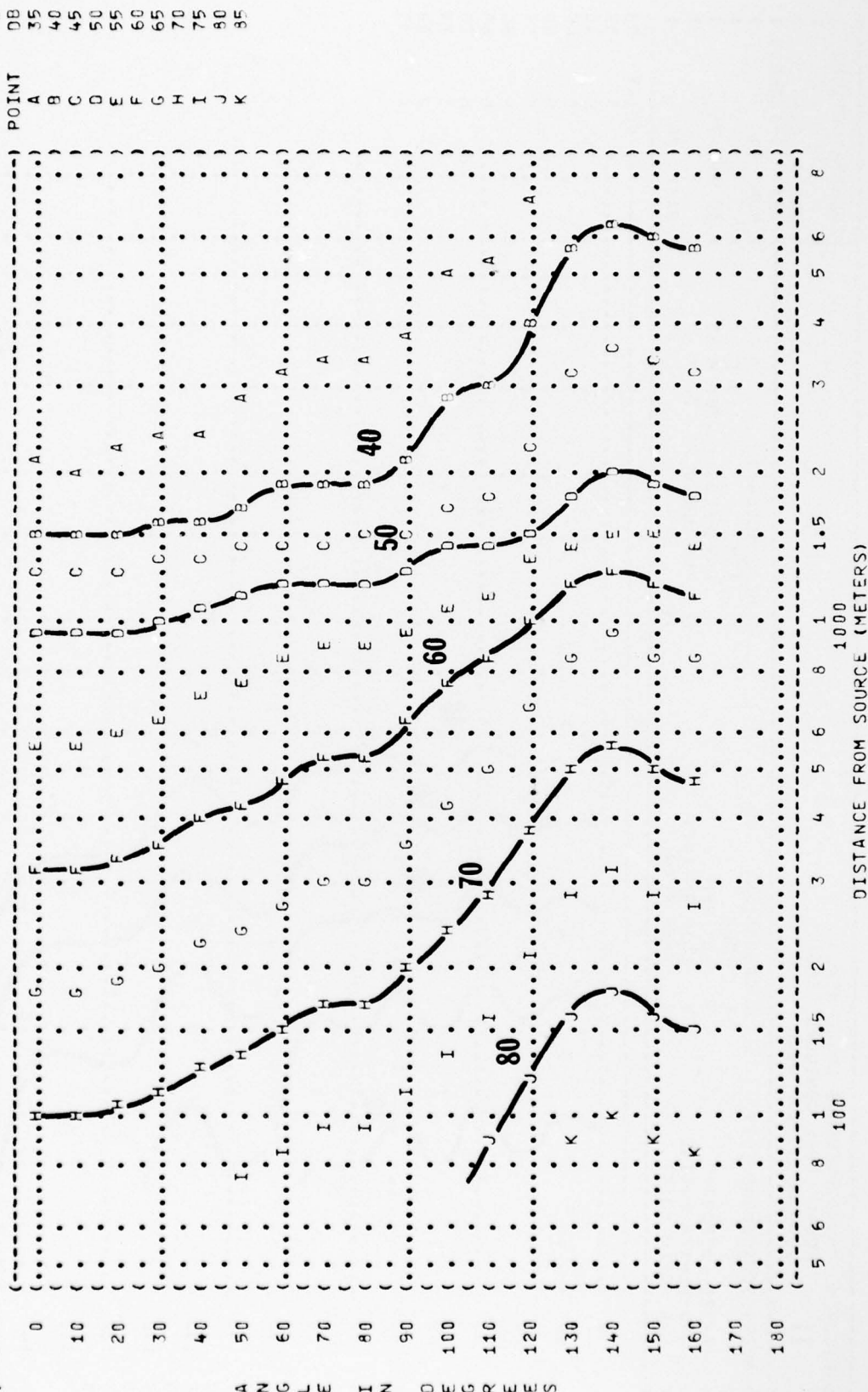


(FIGURE: SOUND PRESSURE LEVEL (SPL)) IDENTIFICATION:)
 ((EQUAL LEVEL CONTOURS (DB)))
 (11 6000 HZ OCTAVE BAND) OMEGA 1.4)
 () TEST 75-002-008)
 (NOISE SOURCE/SUBJECT:) OPERATION:) METEOROLOGY:)
 ((IDLE)) TEMP = 15 C)
 (A-37B AIRCRAFT) (46% RPM))
 (J85-GE-17A ENGINE) (BOTH ENGINES))
 (FAR FIELD NOISE) (FREE FLOW))
 () RAR PRESS = .760 M HG)
 () REL HUMID = 70 %)
 () PAGE 26)

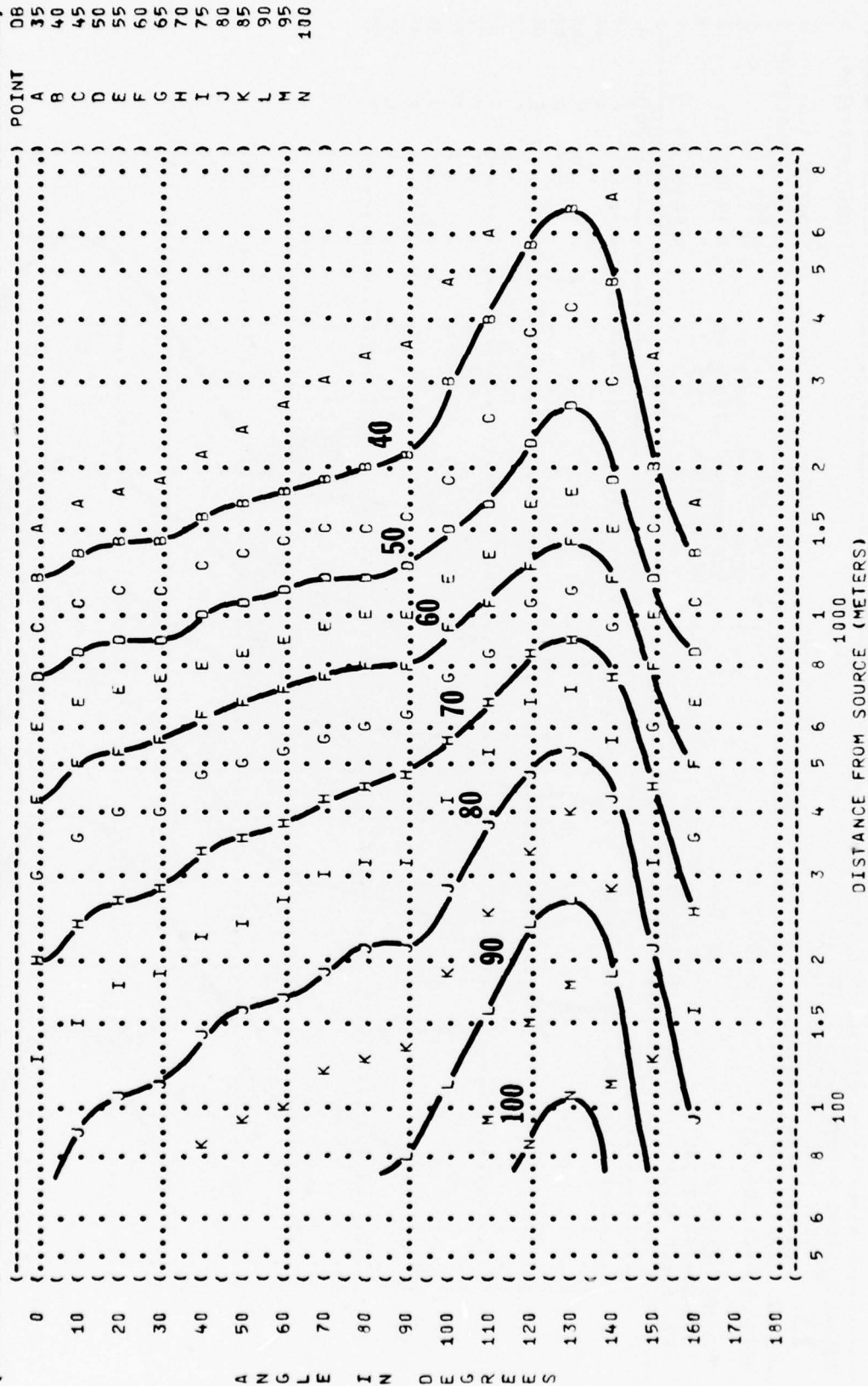


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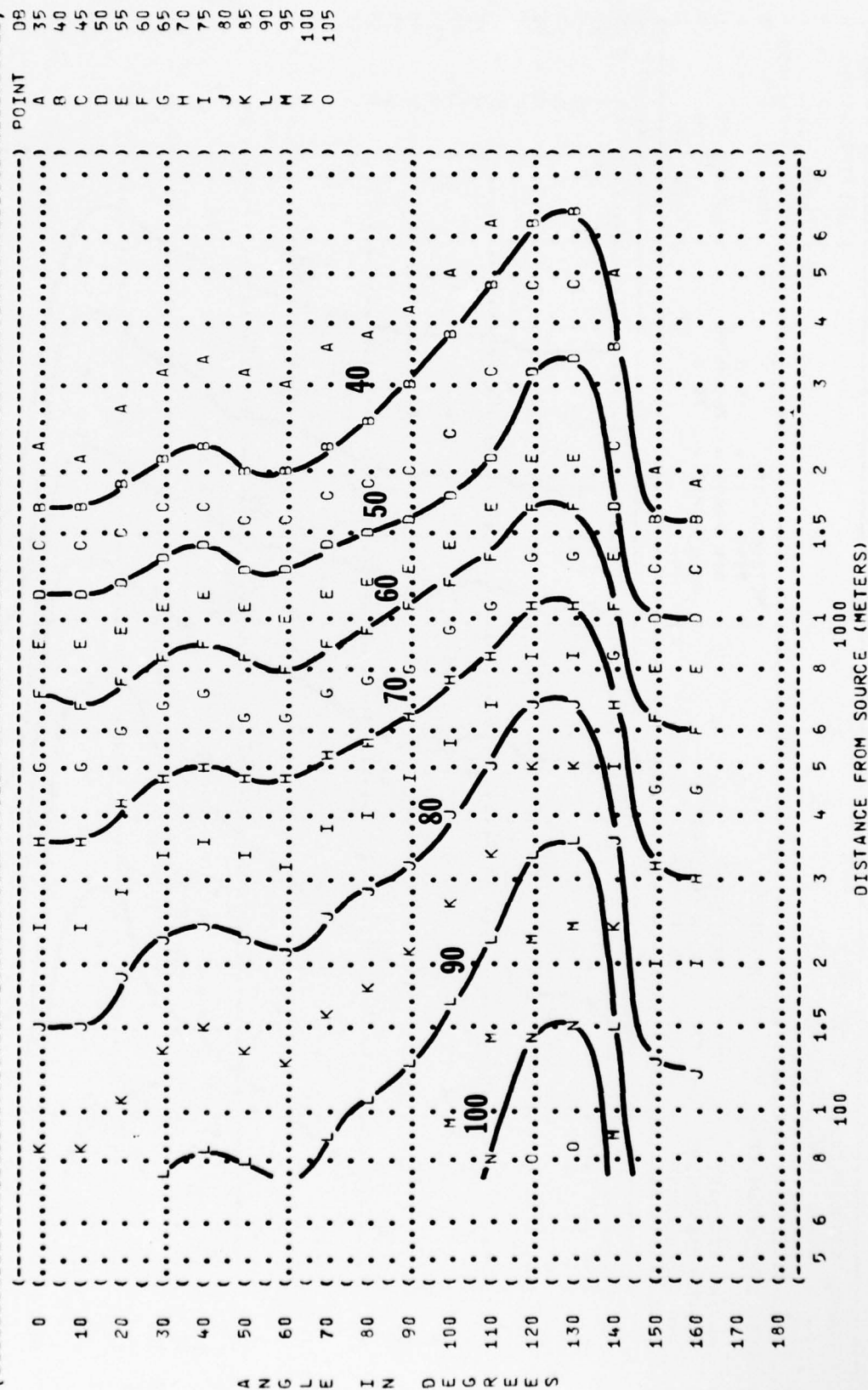
(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (03)
 (11 31.5 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (A-378 AIRCRAFT (85% RPM
 (J85-GE-17A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 75-002-053
 (RUN 01
 (13 MAY 75
 (PAGE 18



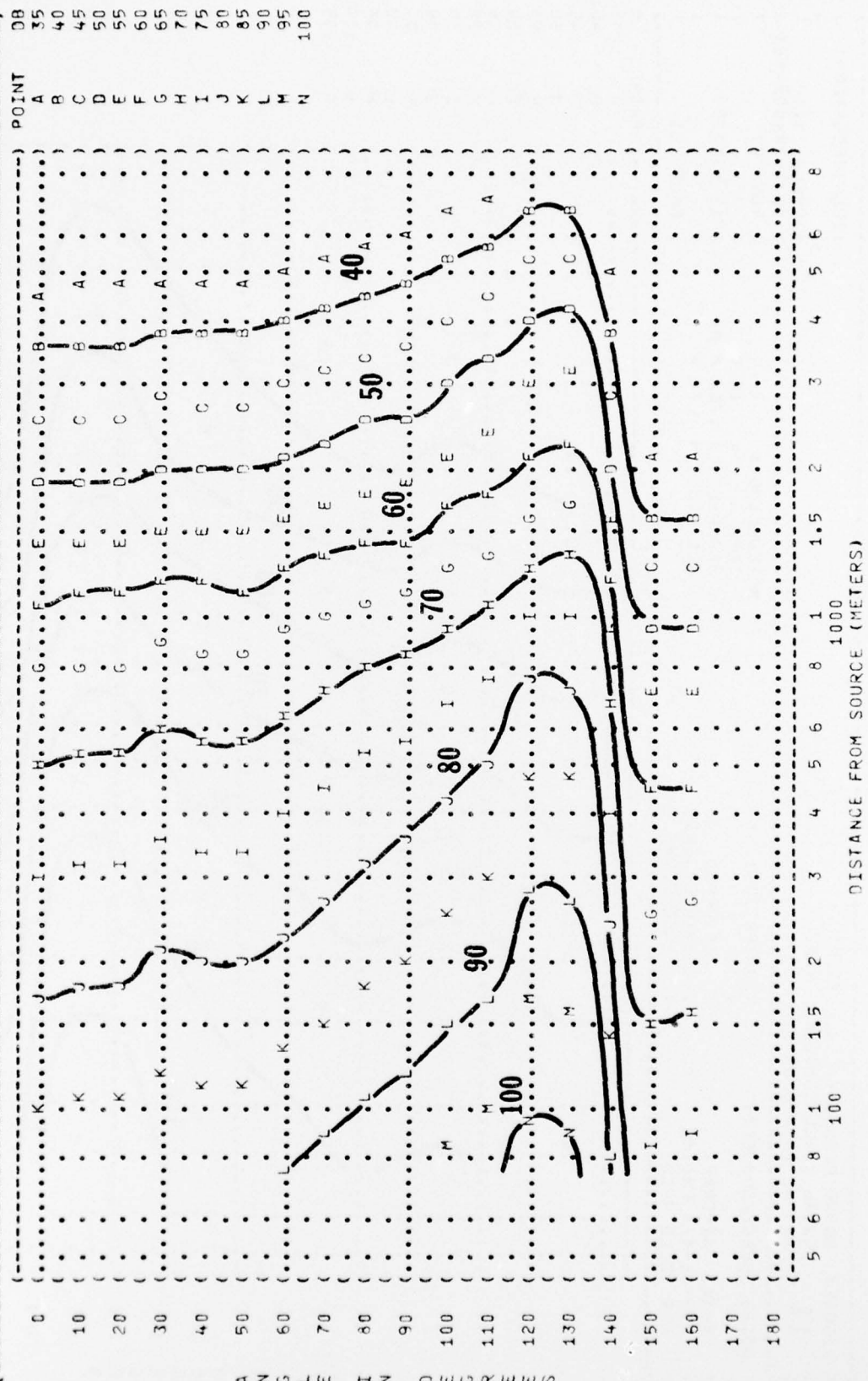

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(-----) IDENTIFICATION: )
( FIGURE: SOUND PRESSURE LEVEL {SPL} )
( EQUAL LEVEL CONTOURS (DB) )
( 11 ) OMEGA 1.4 )
( 125 HZ OCTAVE BAND ) TEST 75-002-053 )
( NOISE SOURCE/SUBJECT: ) METEOROLOGY: ) RUN 01 )
( OPERATION: ) TEMP = 15 C )
( A-37B AIRCRAFT ) BAR PRESS = .760 M HG )
( J85-GE-17A ENGINE ) BOTH ENGINES ) 13 MAY 75 )
( FAR FIELD NOISE ) FREE FLOW ) REL HUMID = 70 % )
( PAGE 20 )
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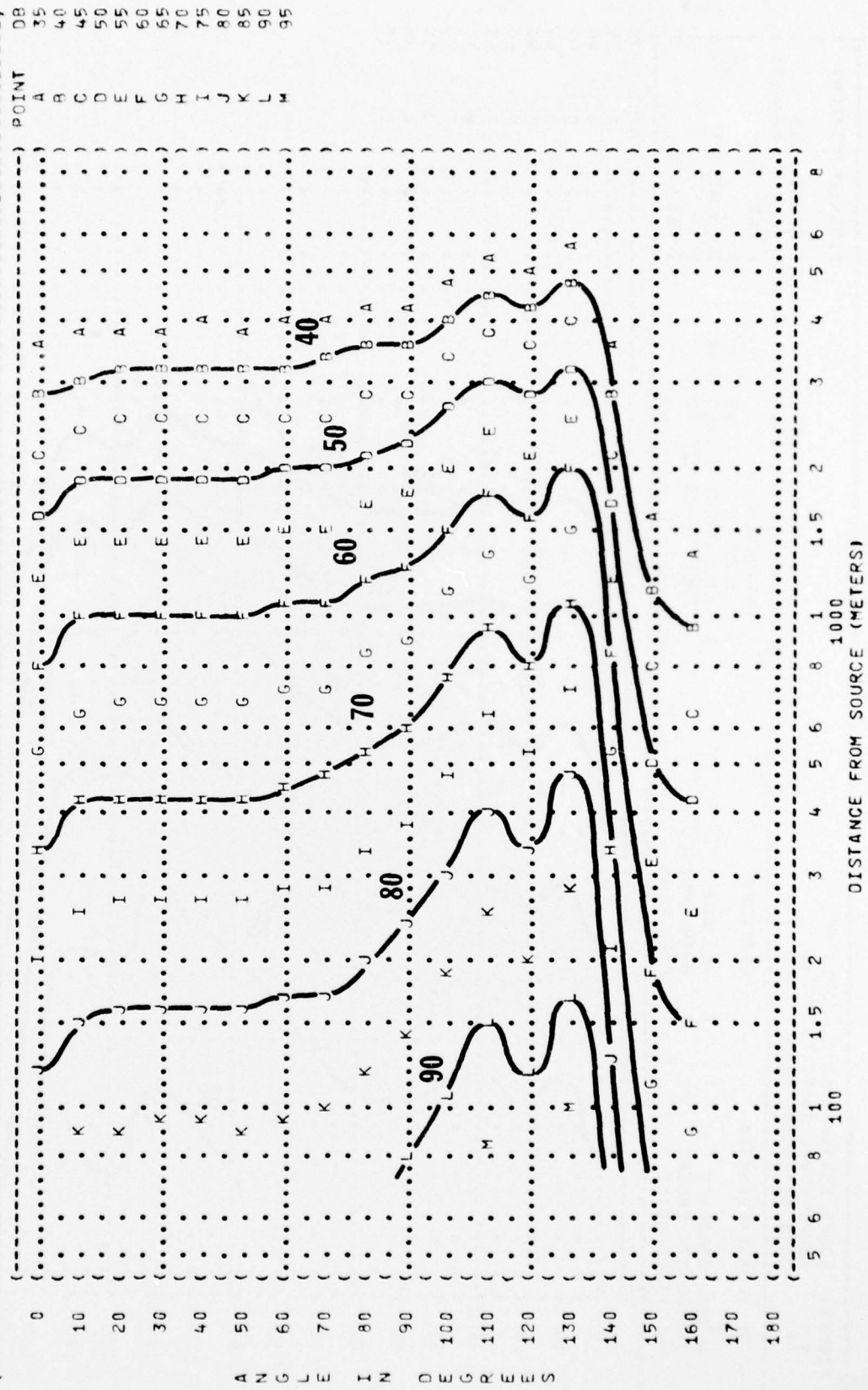
(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (11 EQUAL LEVEL CONTOURS (DB))
 (250 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (OPERATION:)
 (A-378 AIRCRAFT)
 (J85-GE-17A ENGINE)
 (FAR FIELD NOISE)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (RUN 01)
 (13 MAY 75)
 (PAGE 21)
 (IDENTIFICATION:)



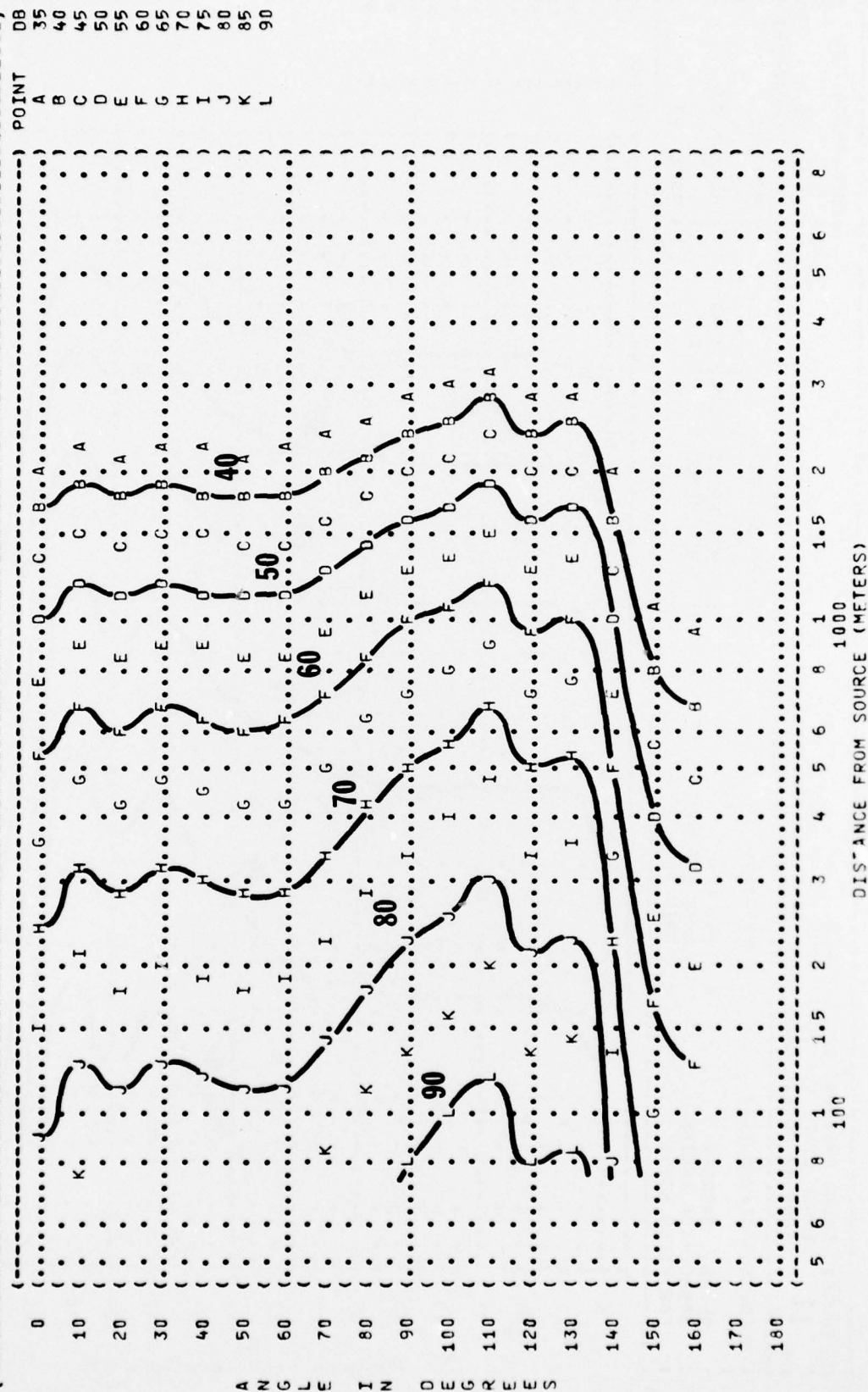
(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (11 EQUAL LEVEL CONTOURS (DB))
 (500 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 (OPERATION:)
 ((85% RPM)
 ((BOTH ENGINES)
 ((FREE FLOW)
 (A-37B AIRCRAFT)
 (J85-GE-17A ENGINE)
 (FAR FIELD NOISE)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 75-002-053)
 (RUN 01)
 (13 MAY 75)
 (PAGE 22)



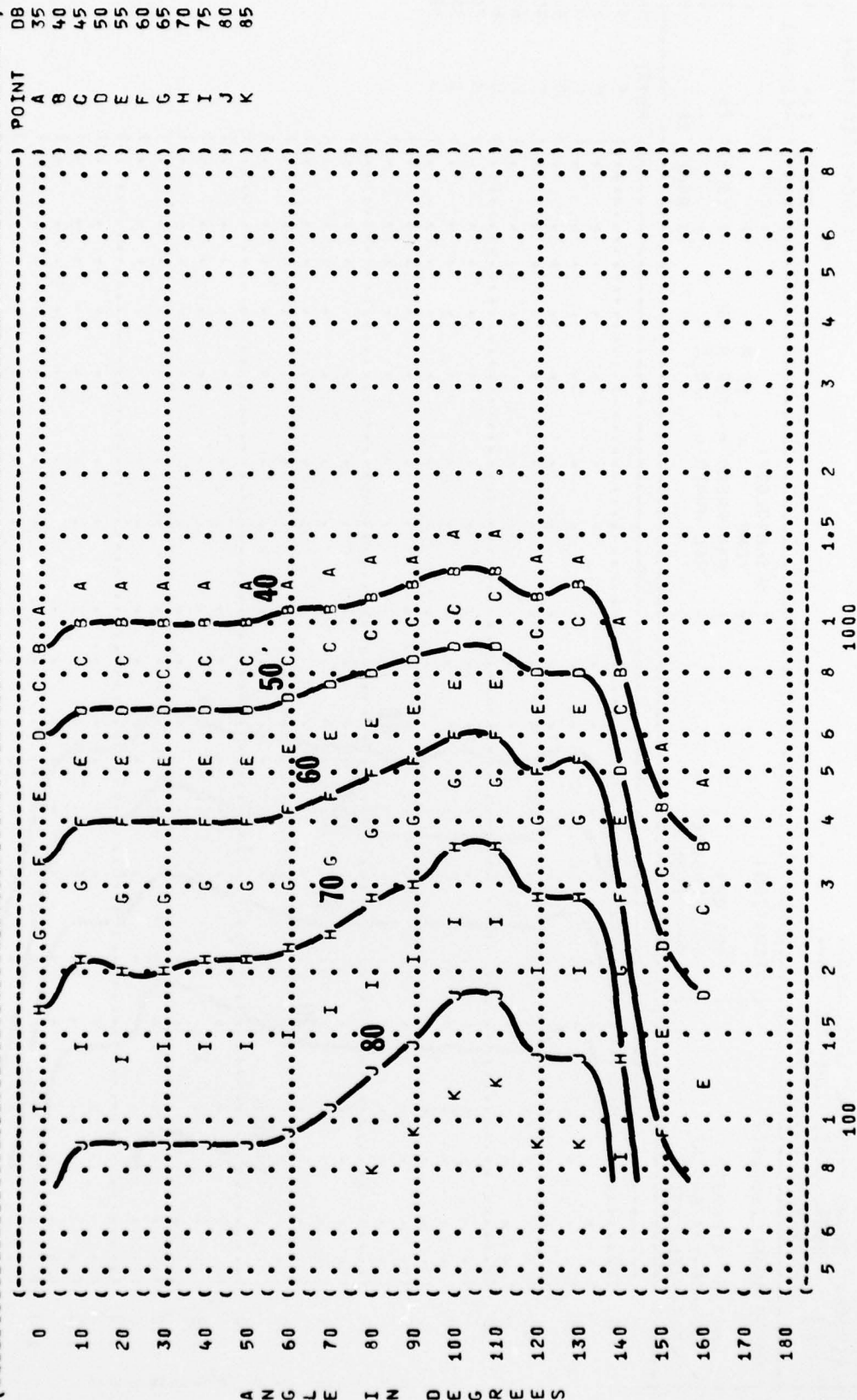
(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (1000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (A-378 AIRCRAFT (85% RPM
 (J85-GE-17A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 75-002-053
 (RUN 01
 (13 MAY 75
 (PAGE 23



(	FIGURE:	SOUND PRESSURE LEVEL {SPL}	) IDENTIFICATION:
(	EQUAL LEVEL CONTOURS	(DB))
(	11		) OMEGA 1.4
(	2000 HZ OCTAVE BAND		) TEST 75-002-053
(	NOISE SOURCE/SUBJECT:	METEOROLOGY:	) RUN 01
(		TEMP = 15 C)
(	A-37B AIRCRAFT	BAR PRESS = .760 M HG	) 13 MAY 75
(	J85-GE-17A ENGINE	REL HUMID = 70 %)
(	FAR FIELD NOISE		) PAGE 24



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (4000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (A-378 AIRCRAFT (85% RPM
 (J85-GE-17A ENGINE (BOTH ENGINES
 (FAR FIELD NOISE (FREE FLOW
 (METEOROLOGY: (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION: (OMEGA 1.4
 (TEST 75-002-053
 (RUN 01
 (13 MAY 75
 (PAGE 25



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (63 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT:
 (OPERATION:
 (A-37B AIRCRAFT
 (J85-GE-17A ENGINE
 (FAR FIELD NOISE
 (MILITARY POWER
 (100% RPM
 (SINGLE ENGINE
 (FREE FLOW
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 75-002-053
 (RUN 02
 (13 MAY 75
 (PAGE 19

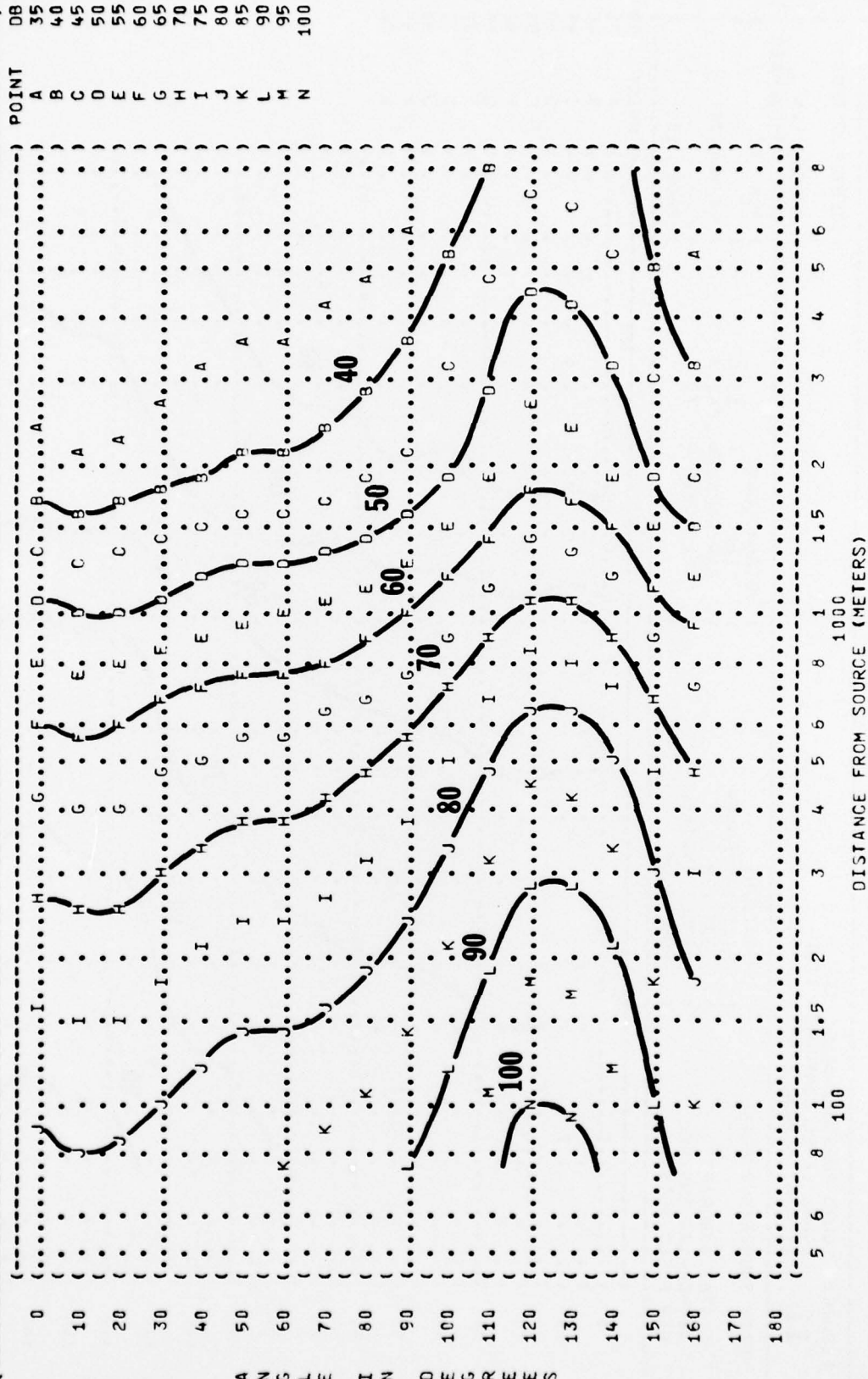


FIGURE 11 SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
125 HZ OCTAVE BAND

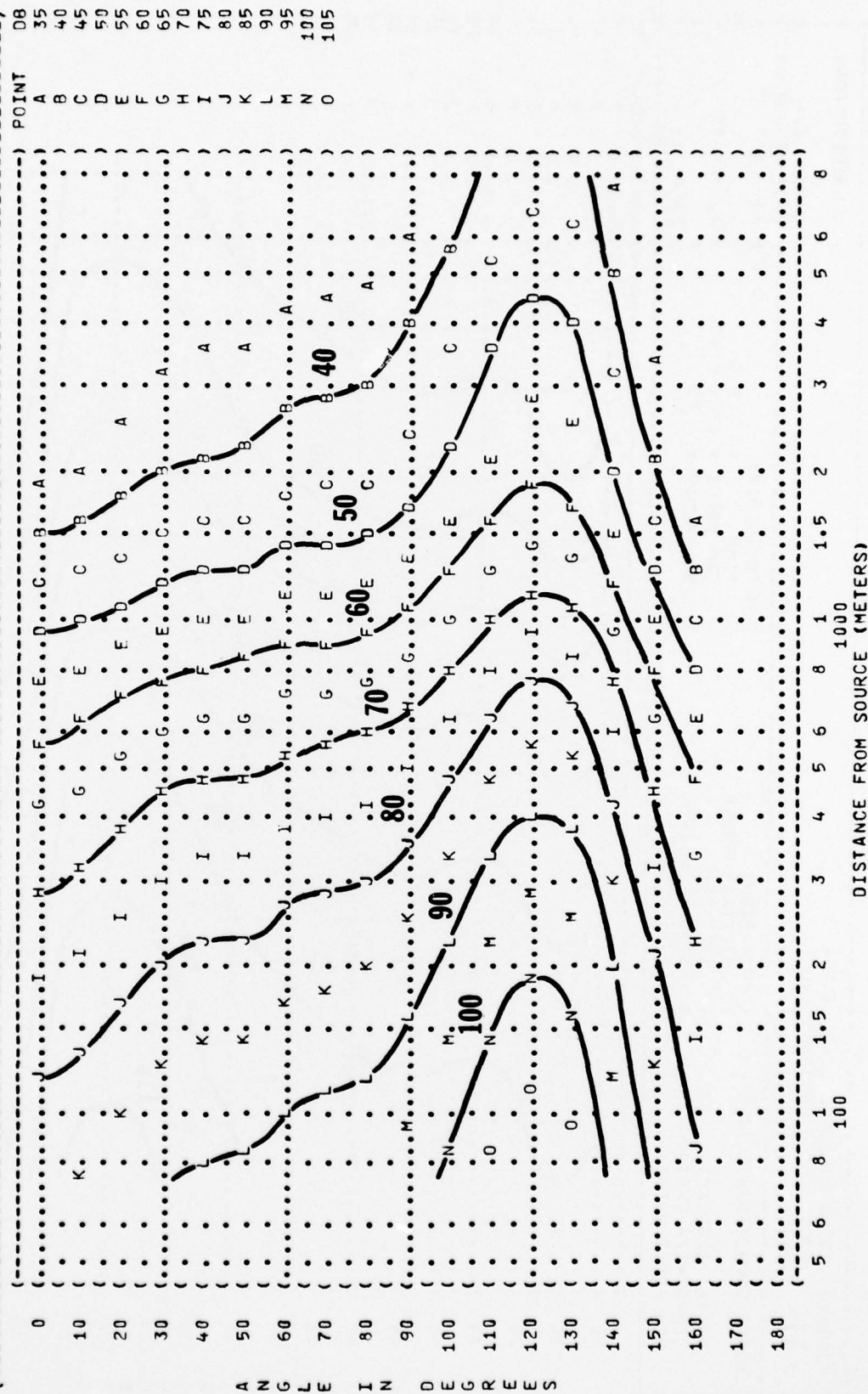
IDENTIFICATION:
OMEGA 1.4
TEST 75-002-053
RUN 02

NOISE SOURCE/SUBJECT:
A-378 AIRCRAFT
J85-GE-17A ENGINE
FAR FIELD NOISE

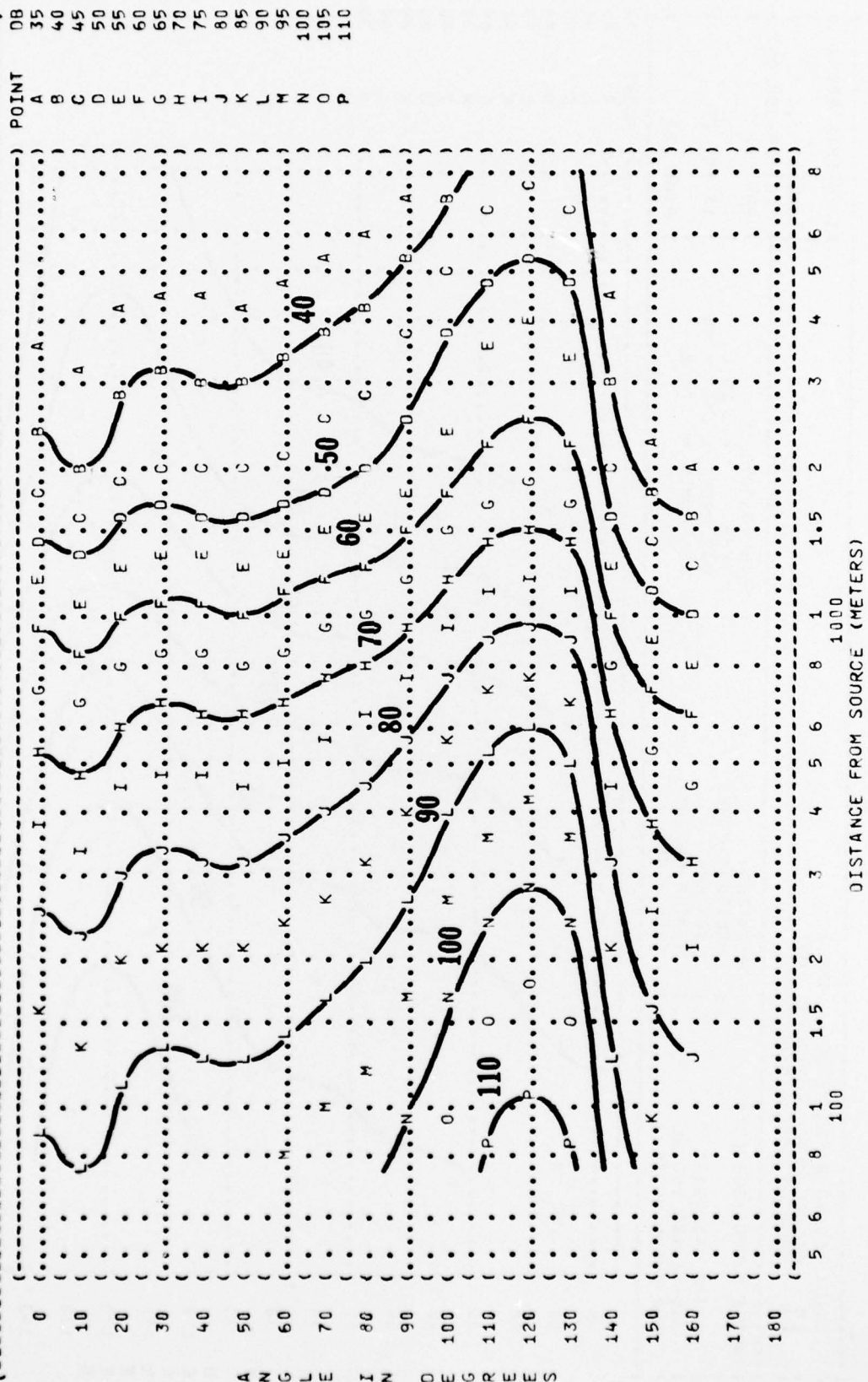
OPERATION:
MILITARY POWER
100% RPM
SINGLE ENGINE
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

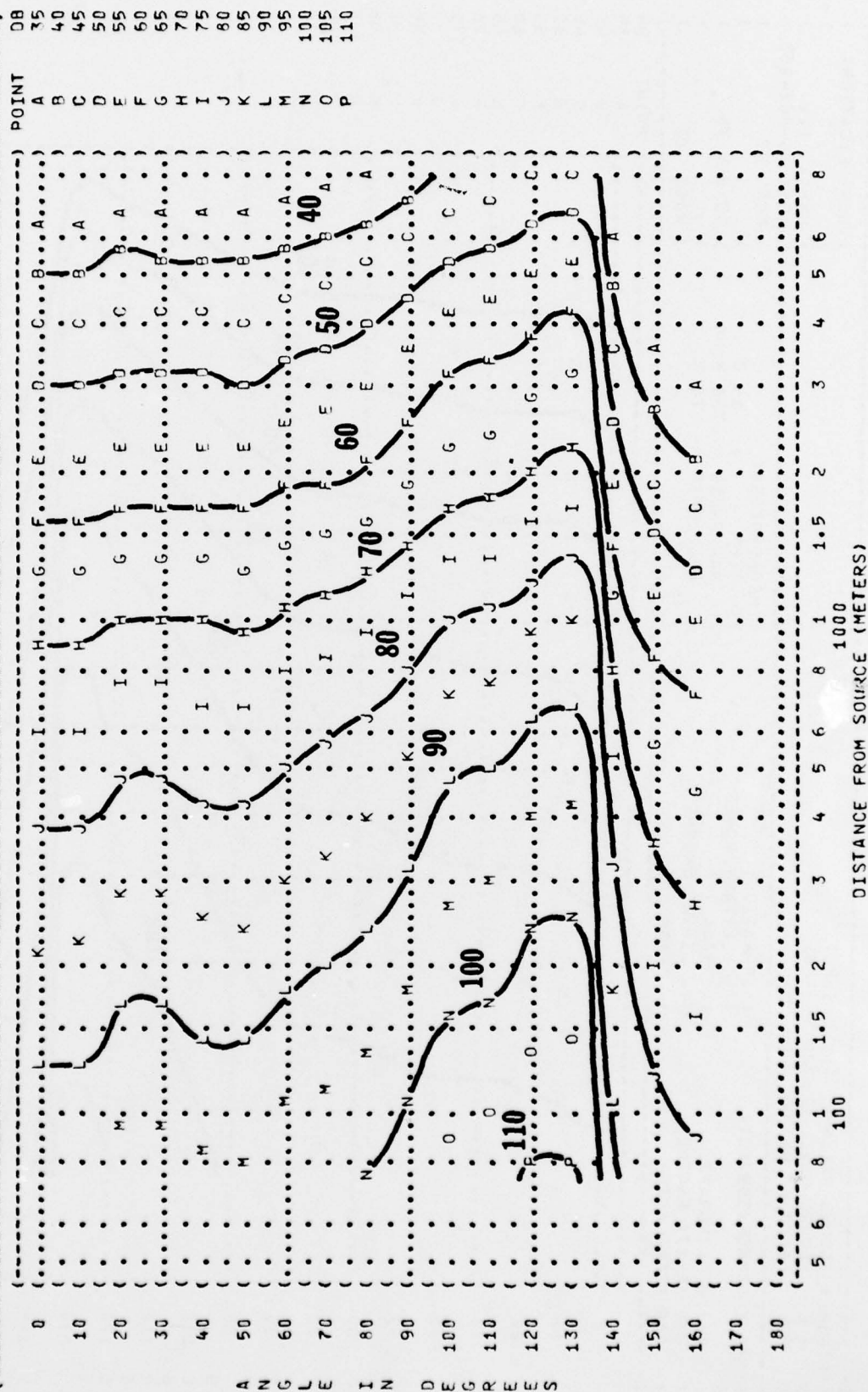
13 MAY 75
PAGE 20



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (EQUAL LEVEL CONTOURS (DB)
 (11 250 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT:
 (OPERATION:
 (A-378 AIRCRAFT
 (J85-GE-17A ENGINE
 (FAR FIELD NOISE
 (MILITARY POWER
 (100% RPM
 (SINGLE ENGINE
 (FREE FLOW
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 75-002-053
 (RUN 02
 (13 MAY 75
 (PAGE 21



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (500 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT: (OPERATION:
 (A-37B AIRCRAFT (MILITARY POWER
 (J85-GE-17A ENGINE (100% RPM
 (FAR FIELD NOISE (SINGLE ENGINE
 (FREE FLOW
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 75-002-053
 (RUN 02
 (13 MAY 75
 (PAGE 22



(FIGURE: SOUND PRESSURE LEVEL (SPL))
 (11 EQUAL LEVEL CONTOURS (DB))
 (1000 HZ OCTAVE BAND)
 (NOISE SOURCE/SUBJECT:)
 ((OPERATION:)
 ((MILITARY POWER)
 ((100% RPM)
 ((SINGLE ENGINE)
 ((FREE FLOW)
 (A-37B AIRCRAFT)
 (J85-GE-17A ENGINE)
 (FAR FIELD NOISE)
 (METEOROLOGY:)
 (TEMP = 15 C)
 (BAR PRESS = .760 M HG)
 (REL HUMID = 70 %)
 (IDENTIFICATION:)
 (OMEGA 1.4)
 (TEST 75-002-053)
 (RUN 02)
 (13 MAY 75)
 (PAGE 23)

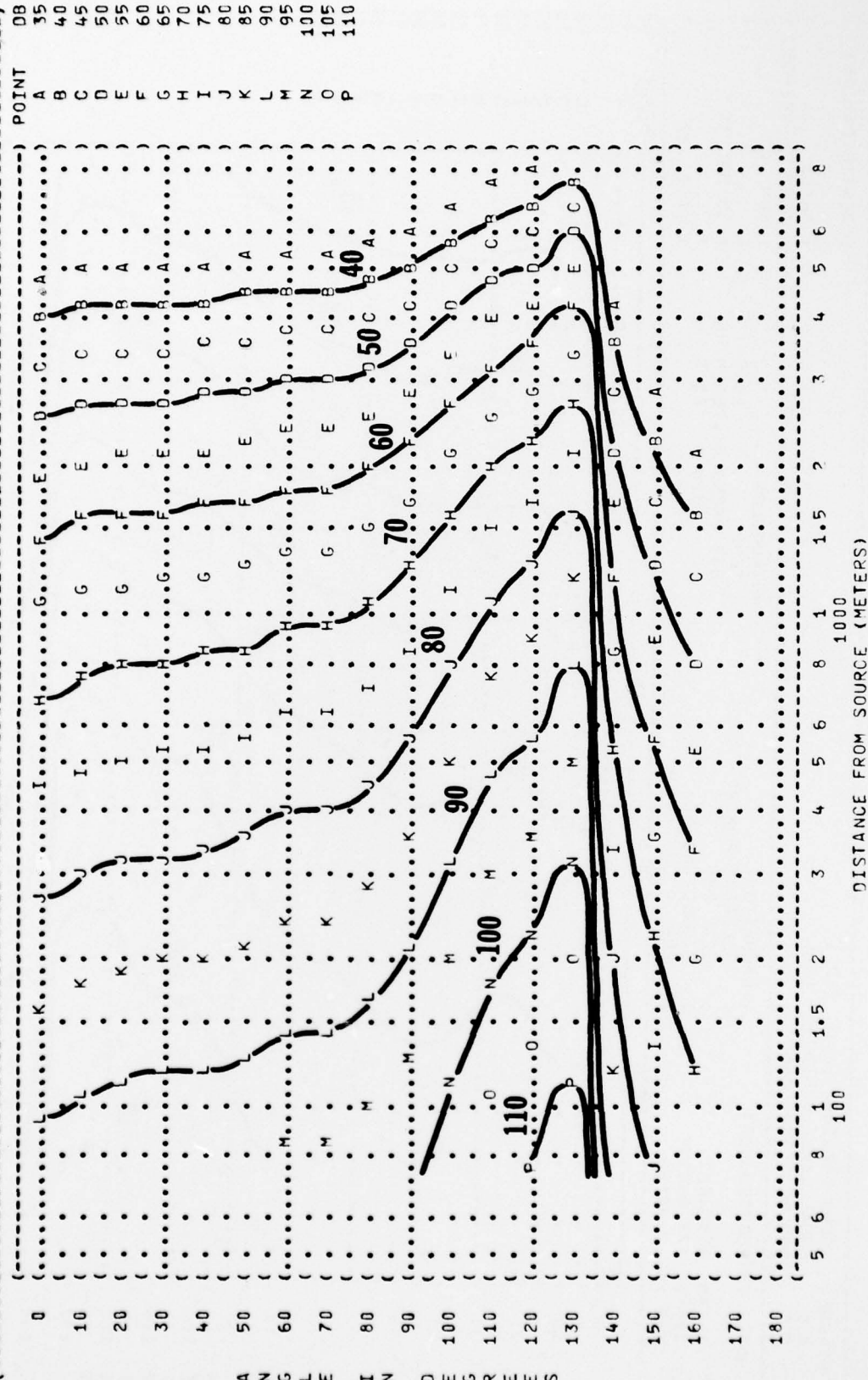


FIGURE 1 SOUND PRESSURE LEVEL (SPL)
 EQUAL LEVEL CONTOURS (DB)
 2000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:

() OPERATION:

() MILITARY POWER

() 100% RPM

() SINGLE ENGINE

() FREE FLOW

() METEOROLOGY:

() TEMP = 15 C

() BAR PRESS = .760 M HG

() REL HUMID = 70 %

() IDENTIFICATION:

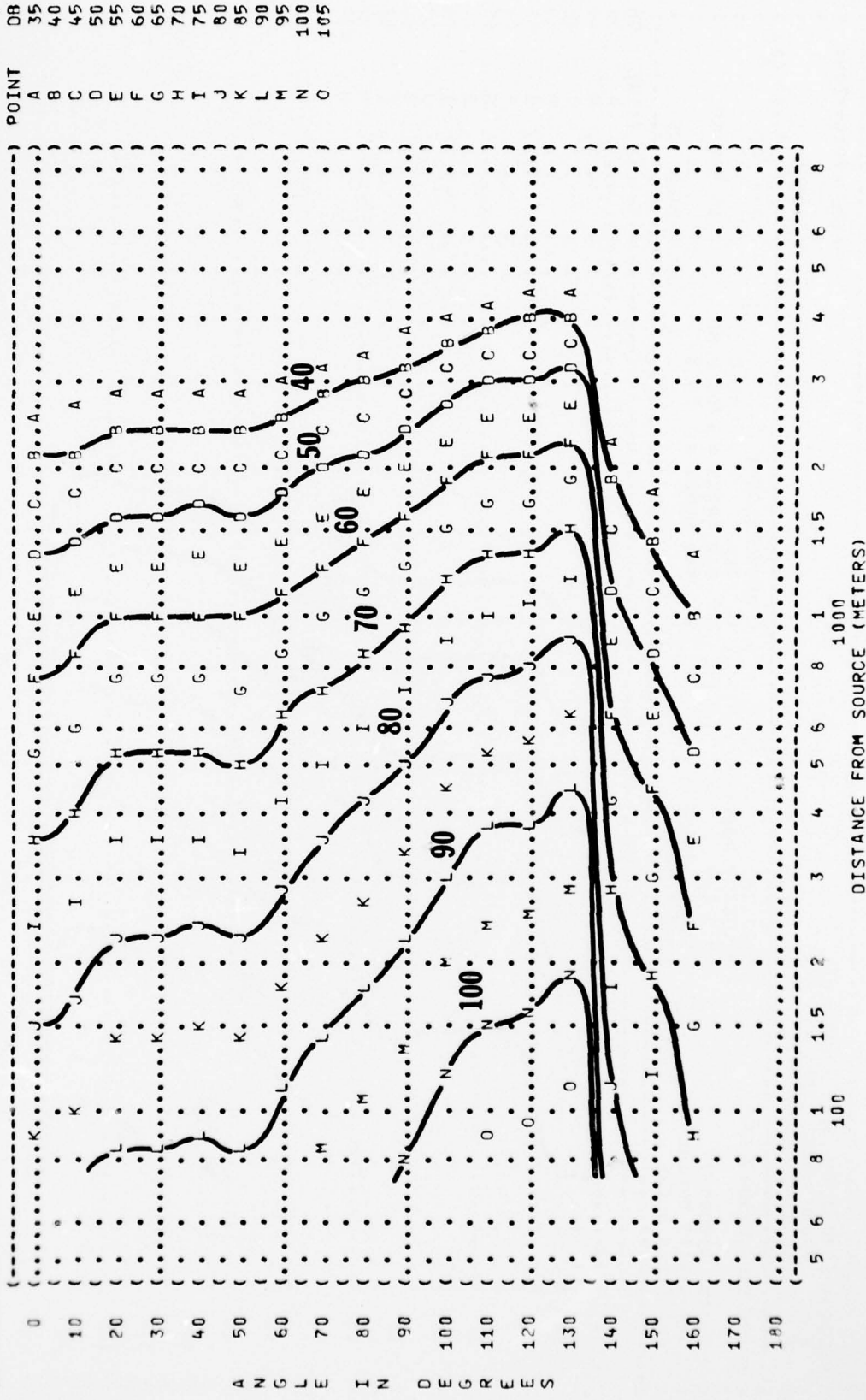
() OMEGA 1.4

() TEST 75-002-053

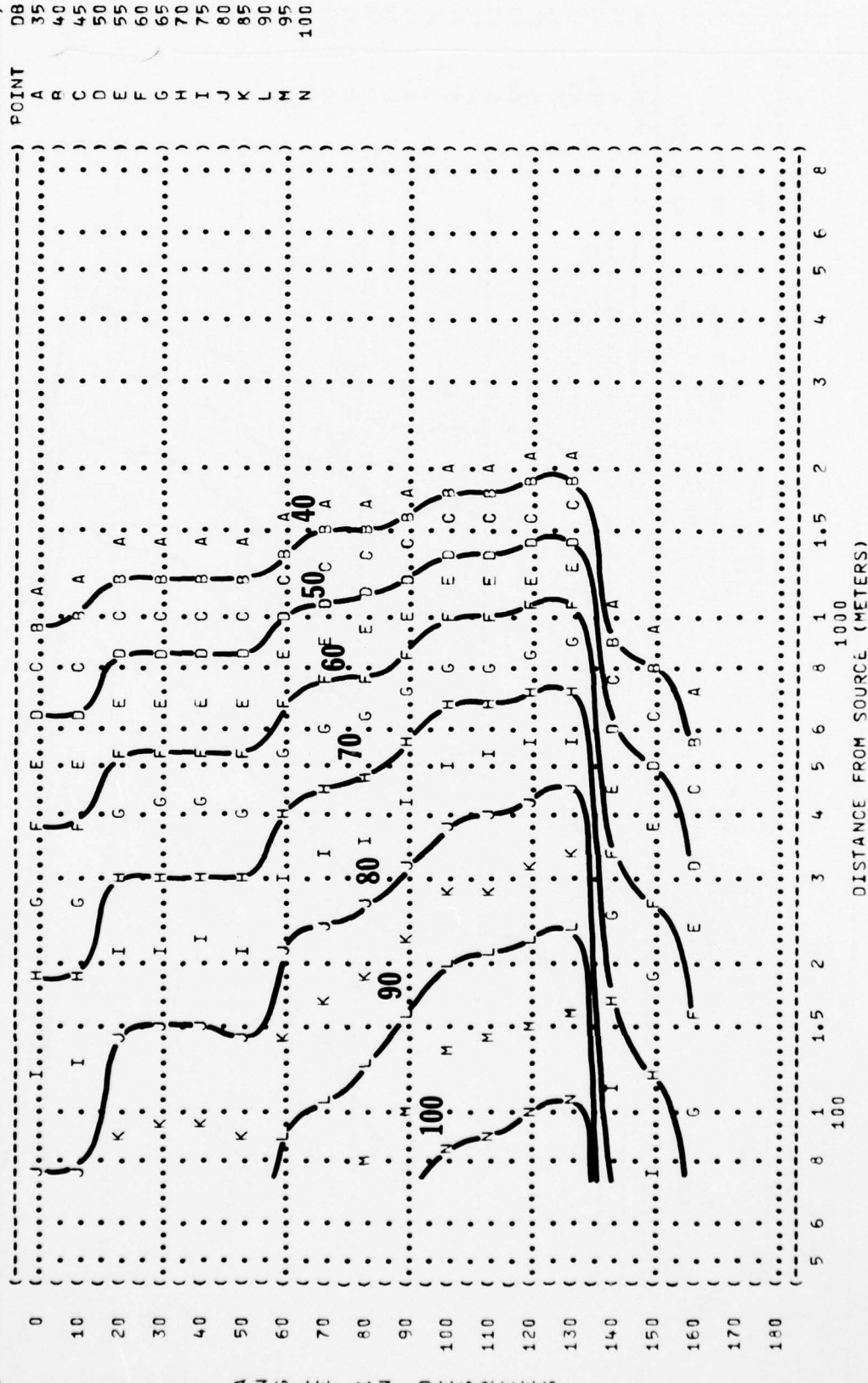
() RUN 02

() 13 MAY 75

() PAGE 24



(FIGURE: SOUND PRESSURE LEVEL (SPL)
 (11 EQUAL LEVEL CONTOURS (DB)
 (4000 HZ OCTAVE BAND
 (NOISE SOURCE/SUBJECT:
 (A-37B AIRCRAFT
 (J85-GE-17A ENGINE
 (FAR FIELD NOISE
 (OPERATION:
 (MILITARY POWER
 (100% RPM
 (SINGLE ENGINE
 (FREE FLOW
 (METEOROLOGY:
 (TEMP = 15 C
 (BAR PRESS = .760 M HG
 (REL HUMID = 70 %
 (IDENTIFICATION:
 (OMEGA 1.4
 (TEST 75-002-053
 (RUN 02
 (13 MAY 75
 (PAGE 25



A N G L E I N D E G R E E S

